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No. 15328

Exhibits in custody of Clerk.

United States Court of Appeals

for the Ninth Circuit

RALPH F. STALLMAN, Appellant,

vs.

CASEY BEARING COMPANY, INC., a corporation, and T. W. CROSBY, Appellees.

Transcript of Record

In Two Volumes

VOLUME I.

(Pages 1 to 284, inclusive)

Appeal from the United States District Court for the Northern District of California Southern Division.

FILED
JAN 29 1957
PAUL P. O'BRIEN, CLERK

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[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in italic; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in italic the two words between which the omission seems to occur.]

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In the United States District Court, Northern District of California, Southern Division

Civil Action No. 33567

RALPH F. STALLMAN, Plaintiff,

vs.

CASEY BEARING COMPANY, INC., a corporation, T. W. CROSBY, McGILL MANUFACTURING CO., a corporation, A CORPORATION, JOHN DOE and RICHARD ROE, Defendants.

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff for cause of action against defendants alleges:

I.

Plaintiff Ralph F. Stallman is a resident of the City of Oakland, County of Alameda, State of California.

II.

Defendant Casey Bearing Company, Inc., is a corporation duly organized and existing under and by virtue of the laws of the State of California, and has its principal place of business in San Francisco, California.

III.

Defendant T. W. Crosby is a resident of Sausalito, Marin County, State of California, and is an

agent and representative of the defendant McGill Manufacturing Company in the State of California.

IV.

McGill Manufacturing Company is a corporation duly organized and existing under and by virtue of the laws of the State of Indiana, and has been qualified to do business in the State of California and has an established place of business in this district.

V.

The names of the defendants sued herein by fictitious names are at present unknown to plaintiff and leave is asked to insert their true names when the same are ascertained.

VI.

This cause of action arises under the patent laws of the United States, Title 35 U.S. Code, and jurisdiction is founded upon Title 28 U.S. Code Section 1338 (A). As to venue, defendants Casey Bearing Company, Inc., and T. W. Crosby are residents of the Northern District of California, said T. W. Crosby is also an Agent and Representative of defendant McGill Manufacturing Co. and all have regular and established places of business in said district and have committed acts of infringement.

VII.

On November 16, 1943, U. S. Letters Patent No. 2,334,227 were duly and legally issued to Ralph F. Stallman for an invention in Needle Bearings.

VIII.

Defendants, and each of them, have been for a long time and within six (6) years last past and prior to the filing of this Complaint, and still are individually and jointly infringing said Letters Patent by manufacturing, using and selling needle bearings embodying said patent and invention in this district and elsewhere in knowing, wanton and deliberate disregard of the rights of plaintiff in the premises.

IX.

Plaintiff has placed the required statutory notice on needle bearings manufactured and sold under said Letters Patent, and has given written notice to the defendants, and each of them, of said infringement.

X.

Plaintiff has been damaged by the infringing acts of defendants, and each of them, in an amount unknown to plaintiff, and plaintiff is informed and believes, and on information alleges that said damage is in excess of Three Thousand Dollars ($3,000.00).

Wherefore, plaintiff prays for damages from the defendants in the amount of ten (10%) per cent of the sales price of each needle bearing manufactured and sold by defendants, and each of them, that is an infringement of said Letters Patent No. 2,334,227.

That plaintiff have judgment against the defendants, and each of them, for reasonable attorneys fees incurred by plaintiff in this action.

That plaintiff have judgment against the defendants for his costs and disbursements herein, and for such other and different relief as this Court may deem meet and proper in the premises.

That the said damages as found hereunder be trebled.

/s/ RALPH F. STALLMAN,
Plaintiff
/s/ ALBERT D. ELLEDGE,
/s/ GEORGE B. WHITE,
Attorneys for Plaintiff

[Endorsed]: Filed May 7, 1954.

[Title of District Court and Cause.]

ANSWER

Now Come the defendants Casey Bearing Company, Inc., and T. W. Crosby, and answering the complaint only for themselves and only as to those allegations pertaining to them, the above-entitled action having been dismissed as to McGill Manufacturing Co. on August 9, 1954, state:

I.

Defendants admit the allegations of Paragraph I of the complaint.

II.

Defendants admit the allegations of Paragraph II of the complaint.

III.

For answer to Paragraph III of the complaint, defendants admit the allegation of residence of T.

W. Crosby, but deny the remaining allegations of said paragraph.

IV.

For answer to Paragraph VI of the complaint, defendants admit the allegations therein of jurisdiction, and of residence for such defendants, but deny the remaining allegations of said paragraph.

V.

For answer to Paragraph VII of the complaint, defendants admit that United States Letters Patent No. 2,334,227 issued on November 16, 1943, but deny the remaining allegations of said paragraph.

VI.

For answer to Paragraph VIII of the complaint, defendants deny each and every allegation of said paragraph.

VII.

For answer to Paragraph IX, defendants admit receipt of a written notice of the aforesaid Letters Patent from plaintiff, but deny each and every other allegation of said paragraph.

VIII.

For answer to Paragraph X of the complaint, defendants deny that they have individually or otherwise infringed Letters Patent No. 2,334,227 at any time since the issuance of such patent and that plaintiff has been damaged by any acts of defendants.

IX.

Defendants, further answering, aver that said Letters Patent No. 2,334,227 are invalid and void for the following reasons:

(a) Because prior to the alleged invention in said Letters Patent, or more than one year prior to the application for said Letters Patent, the alleged invention had been patented or described in the following patents and printed publication:

United States Patents

Pat. No.—Patentee—Date Issued

58,109—H. M. LeDuc—September 18, 1866.
129,256—R. W. Smith—July 16, 1872.
388,238—D. Allen—August 21, 1888.
496,346—D. W. Copeland—April 25, 1893.
585,580—D. E. Kempster—June 29, 1897.
683,408—D. E. Kempster—September 24, 1901.
747,324—D. E. Kempster—December 15, 1903.
779,403—D. Allen—January 10, 1905.
802,362—J. M. Green, et al.—October 17, 1905.
839,084—W. T. Fleming, December 18, 1906.
849,094—O. F. Zahn—April 2, 1907.

Foreign Patents

Br. 10,116—D. E. Kempster—August 3, 1901.
Fr. 370,821—O. F. Zahn—February 20, 1907.

Publication

The Wälzlager, by Wilhelm Jürgensmeyer, published by Julius Springer in Berlin, 1937, pages 23 and 24;

as well as in other patents and printed publications in this and in other countries.

(b) Because prior to the making of the alleged invention of said Letters Patent, said alleged invention had been known to and used by others in the United States, to wit: by the several patentees

of the United States Letters Patent listed in sub-section (a) hereof, and by the author of the publication listed in sub-section (a) hereof, as well as by others.

(c) Because the applicant for said Letters Patent, the plaintiff herein, was not the original or first inventor or discoverer of the alleged invention purporting to be patented therein, but it had previously been devised by others who had not abandoned, suppressed, or concealed the same, to wit, persons identified in sub-section (b) hereof, as well as by others.

(d) Because any differences between the subject matter sought to be patented by said Letters Patent and the prior art are such that the subject matter as a whole would have been obvious at the time the alleged invention was made to a person having ordinary skill in the art to which said subject matter pertains.

(e) Because the specification of said Letters Patent does not contain a written description of the alleged invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains to make and use the same.

(f) Because during the prosecution of the application for said Letters Patent, substantial and material alterations were made in the statement and claims of invention for which no supporting oath of the applicant was provided.

(g) Because of unreasonable delay and failure to disclaim claims of said Letters Patent which are invalid and the invalidity of which the plaintiff has had notice and knowledge for many years.

X.

Further answering, defendants aver that the plaintiff is estopped by the proceedings in the United States Patent Office in the matter of his application for said Letters Patent No. 2,334,227 and the acquiescence of said applicant in and to the rulings and rejections of the Commissioner of Patents in the negotiations for said Letters Patent, and in and by the limitations imposed thereby during the negotiations in the United States Patent Office leading up to the grant and issuance of said Letters Patent, from claiming any scope or subject matter of said alleged Letters Patent or any of the claims thereof as would comprehend or embrace any apparatus sold, offered for sale, or used by defendants.

XI.

Further answering, defendants aver that they have not committed any act of infringement of said Letters Patent No. 2,334,227 or any of the claims thereof.

XII.

Further answering, defendants aver that said Letters Patent No. 2,334,227 were issued by the United States Patent Office without due investigation, and that an important part of the relevant prior art was not cited by the Patent Office, and that other parts of said prior art were improperly

applied and construed, and that the Commissioner of Patents exceeded his legal authority in granting the aforesaid Letters Patent and they are, therefore, void and of no effect.

Wherefore, defendants pray:

(A) That the complaint herein be dismissed;

(B) That the cost of this suit be taxed against the plaintiff;

(C) That defendants be awarded reasonable attorneys' fees;

(D) That the defendants have such other and further relief as to this Court may seem just and as the circumstances warrant.

Dated: September 8, 1954.

CASEY BEARING COMPANY,
INC., a corporation,
T. W. CROSBY,
Defendants
By NAYLOR & LASSAGNE,
JAS. M. NAYLOR
MUELLER & AICHELE,
FOORMAN L. MUELLER,
/s/ By JAS. M. NAYLOR
Attorneys for Defendants

Affidavit of Mailing attached.

[Endorsed]: Filed September 9, 1954.

[Title of District Court and Cause.]

DEFENDANTS' NOTICE OF ADDITIONAL PRIOR ART TO BE RELIED UPON AT THE TRIAL

To plaintiff above named and to George B. White, Esq., and Albert D. Elledge, Esq., his attorneys:

Please take notice, pursuant to Title 35, United States Code, Sec. 282 (4), that at the trial of this cause defendants will rely upon the following additional patents as anticipations of the patent in suit or to show the state of the art and for the purposes specified in Paragraph IX (a) and (b) of defendants' Answer on file therein:

United States Patents

223,802—E. D. Draper—Issued Jan. 27, 1880.
892,866—E. Moonen—Issued July 7, 1908.
1,018,324—D. E. Kempster—Issued Feb. 20, 1912.
1,080,288—C. S. Lockwood—Issued Dec. 2, 1913.
1,257,597—H. Gallet—Issued Feb. 26, 1918.
1,510,920—W. S. Bronander—Issued Oct. 7, 1924.
1,885,914—L. R. Heim—Issued Nov. 1, 1932.
1,979,707—P. W. Rydbeck—Issued Nov. 6, 1934.

British Patent

17,841 of 1906—Oswald Francis Zahn—Issued Jan. 10, 1907.

German Patent

189,566—Oswald Francis Zahn—Issued Aug. 11, 1906.

Canadian Patent

107,172—Oswald Francis Zahn—Issued Aug. 27, 1907.

French Patent

466,595—Perosa—Issued May 16, 1914.

NAYLOR & NEAL,
JAS. M. NAYLOR,
/s/ By JAS. M. NAYLOR,
Attorneys for Defendants

Certificate of Service attached.

[Endorsed]: Filed March 13, 1956.

[Title of District Court and Cause.]

VERDICT

We, the Jury, find in favor of the plaintiff and determine that the Stallman Patent No. 2,334,227 is valid and infringed by the defendant as to Claims Nos. 3, 4, 5, 9.

We find damages against defendant Casey Bearing Company, Inc., et al., in the sum of $3,683.51, which is 10 per cent of $36,835.18, the total price of Guiderol Bearings which have been stipulated to have been sold by said defendants.

/s/ FREDERICK A. WEBSTER, JR.,
Foreman

Filed April 23, 1956, at 4 o'clock and 30 minutes p.m. C. W. Calbreath, Clerk, by Edward C. Evensen, Deputy Clerk.

[Endorsed]: Filed April 23, 1956.

[Title of District Court and Cause.]

JUDGMENT ON VERDICT

This cause having come on regularly for trial on April 18, 1956, before the Court and a Jury of twelve persons duly impaneled and sworn to try the issues joined herein; and George B. White, Esq., and Albert D. Elledge, Esq., appearing as attorneys for the plaintiff, and James M. Naylor, Esq., and Foorman L. Mueller, Esq., appearing as attorneys for the defendants, and the trial having been proceeded with on April 18, 19, 20, 23, 1956, and oral and documentary evidence on behalf of the respective parties having been introduced and closed, and the cause, after arguments by the attorneys and the instructions of the Court, having been submitted to the Jury and the Jury having subsequently rendered the following verdict, which was ordered recorded, viz.:

> "We, the Jury, find in favor the plaintiff and determine that the Stallman Patent No. 2,334,227 is valid and infringed by the defendant as to Claims Nos. 3, 4, 5, 9.
>
> We find damages against defendant Casey Bearing Company, Inc., et al., in the sum of $3,683.51, which is 10 per cent of $36,835.18, the total price of Guiderol Bearings which have been stipulated to have been sold by said defendants.
>
> Frederick A. Webster, Jr.,
> Foreman,"

and the Court having ordered that judgment be en-

tered herein in accordance with said verdict and for costs;

Now, therefore, by virtue of the law and by reason of the premises aforesaid, it is considered by the Court that said plaintiff do have and recover of and from said defendant Casey Bearing Company, Inc., the sum of $3,683.51, together with.... costs herein expended taxed at $.....

Dated: April 24th, 1956.

/s/ C. W. CALBREATH,
Clerk

Entered in Civil Docket April 25, 1956.

[Endorsed]: Filed April 24, 1956.

[Title of District Court and Cause.]

DEFENDANT'S MOTION FOR JUDGMENT NOTWITHSTANDING VERDICT AND MOTION FOR NEW TRIAL

Defendant, Casey Bearing Company, Inc., moves the Court to set aside the verdict and judgment heretofore entered in the above-entitled action and to enter judgment in favor of the defendant in accordance with its motion for a directed verdict made at the close of all of the evidence, and upon the additional grounds;

1. That the patent in suit does not provide a written description of the alleged invention in the clear, concise, and exact terms as required by the

patent statutes, nor do the claims meet the requirements of such statutes;

2. That the evidence in this case does not support the jury's verdict that the patent in suit is valid and infringed; and

3. That the award of damages to plaintiff in the amount of $3,683.51 is improper and unjust.

In the alternative, defendant moves the Court for a new trial.

As grounds for such two motions defendant presents the following reasons:

1. Claims 3, 4, 5 and 9 of the Patent in Suit are invalid as anticipated by the prior art and lacking invention thereover.

35 USC 112

Atlantic Works vs. Edwin L. Brady, 107 U.S. 192 (1883).

Great A & P Tea Co. vs. Supermarket Equipment Corp. 340 U.S. 147 (1950).

Upright Inc. vs. Patent Scaffolding Co., 108 USPQ 24 CA9 (1955); and (135 F. Supp. 813, 1954).

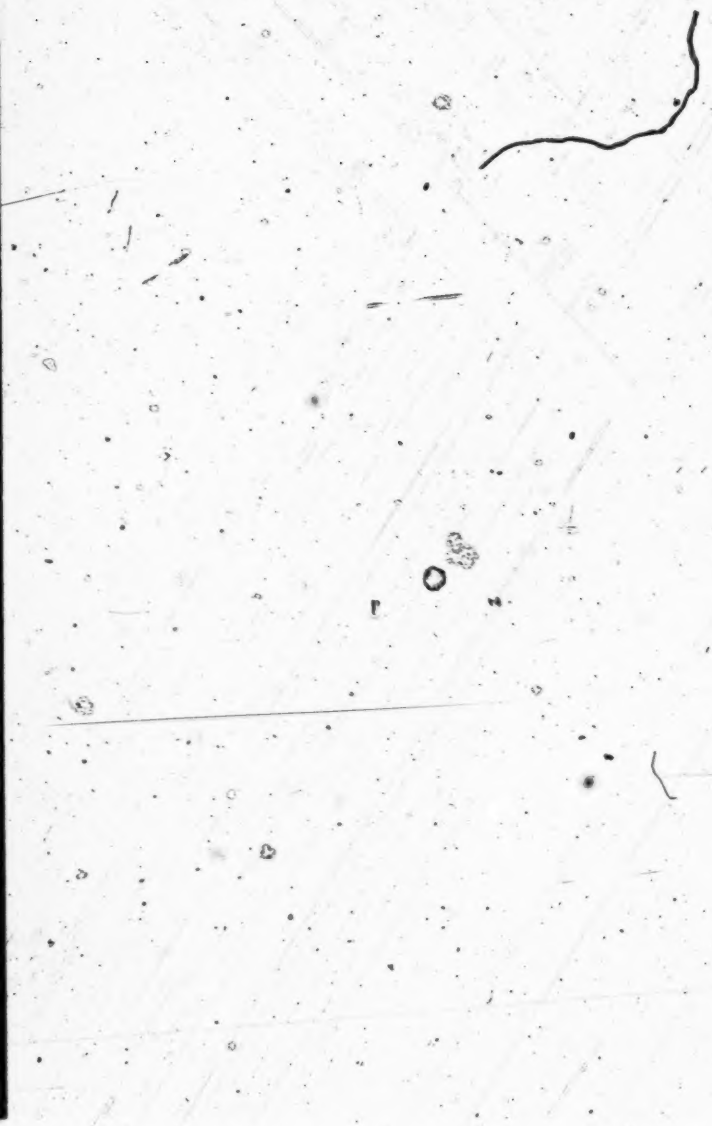
Kwikset Locks vs. Hillgren, 210 F(2d). 483, CA9 (1954).

Himes et al. vs. Chadwick, 199 F(2d) 100, CA9 (1952).

Jacuzzi Bros. Inc. vs. Berkeley Pump Co., et al, 191, F(2d) 632, CA9 (1951).

Gomez, et al. vs. Granat Bros., et al., 177 F(2d) 266 CA9 (1949).

(a) Claim 9 is the broadest and reads word for word upon Kempster U. S. Patent No. 585,580 of June 29, 1897, as demonstrated in the following reproduction of the chart Def's. Ex. V. This Kempster patent was not cited by the Patent Office.



Stallman Patent No, 2,334,227 - Claim 9

A bearing comprising

a cylindrical inner race (8) and

an outer race (3 on 2),

a plurality of rolls (6) having reduced portions (7) intermediate their ends interposed between said races,

a ring (4) carried by the outer race and registering within the reduced portion of the rolls to engage the rolls in the event they become misaligned with their normal position and

a second ring (10) contained by said reduced portions of the rolls adjacent the inner race to retain the rolls in place against the outer race when the races are separated.

Fig. 2.

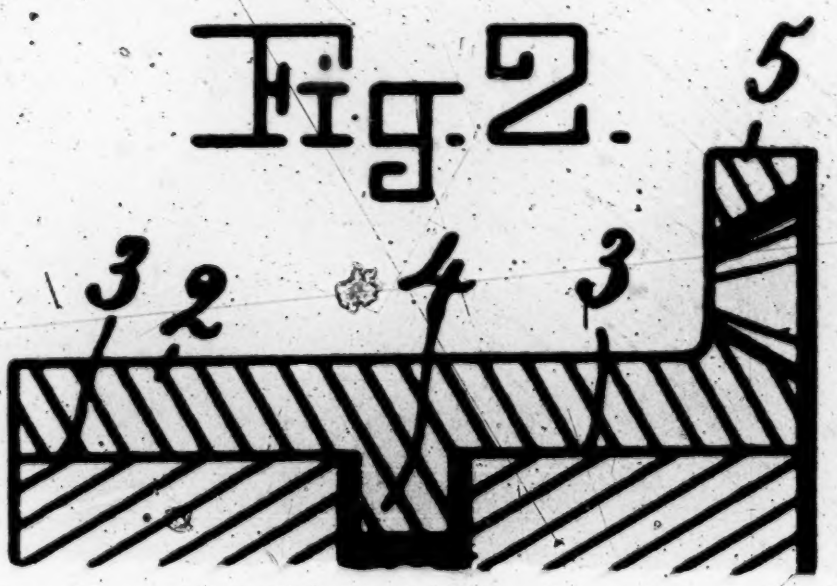
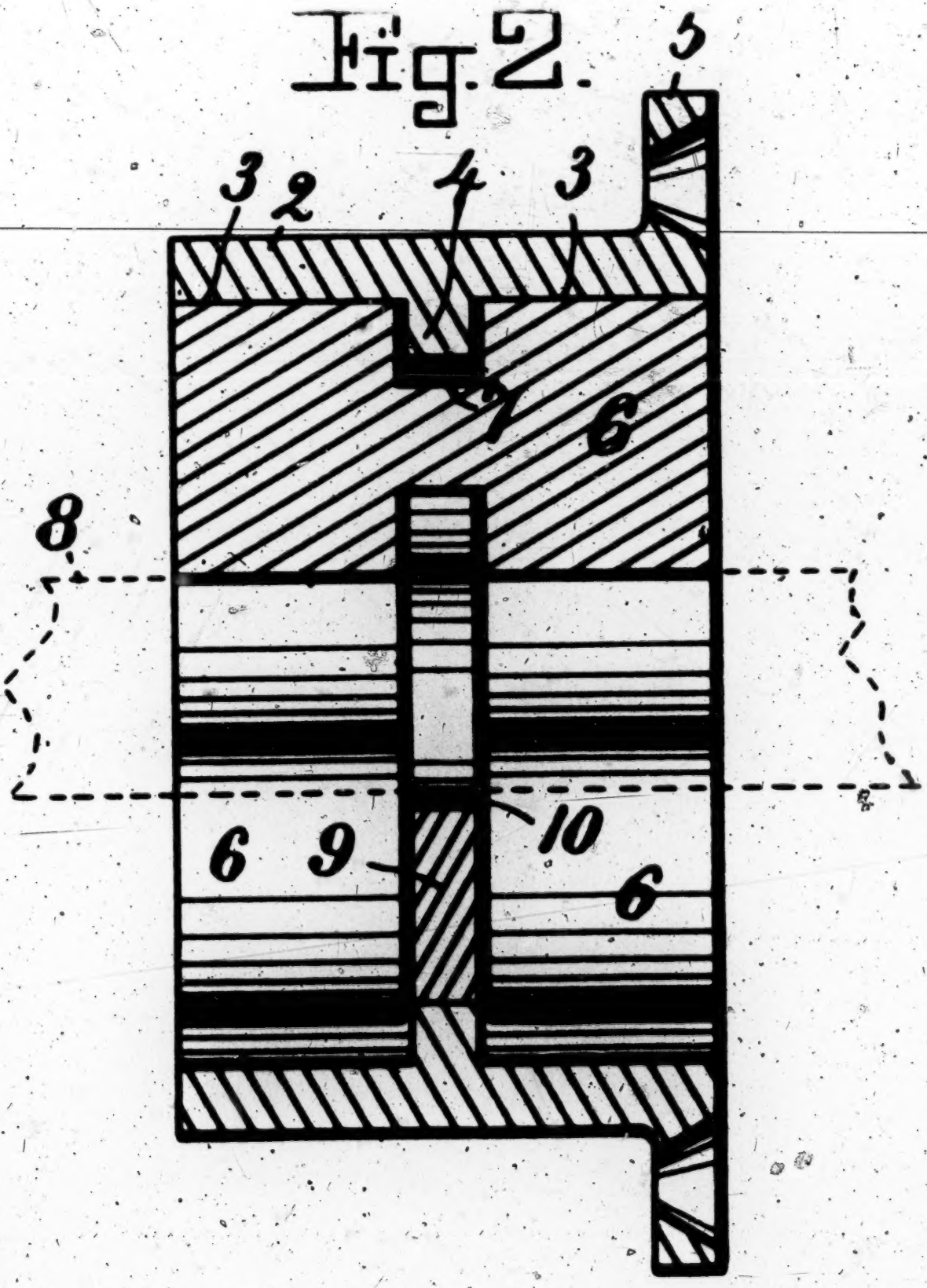


Fig. 2.



(1) In addition there are the Heim (1,885,914) and Rydbeck (1,979,707) patents cited by the Patent Office.

(2) With respect to limitations in claims 3, 4 and 5 which are more specific than those in claim 9, the prior art in addition to Kempster 585,580 is similarly anticipatory.

(3) The guide rail on the stationary outer race only is shown in the Zahn British patent No. 17,841 of 1906, and there are numerous other examples of a roller bearing with a stationary guide rail in the patents in the prior art (Def's. Ex. O) not cited by the Patent Office.

(b) The function and the operation for his bearing as specifically called for by plaintiff whether in his patent, the file wrapper (Def's. Ex. A), or in his testimony, are described substantially in plaintiff's own language in the following prior patents (Def's. Ex. O), none of which were considered by the Patent Office:

Zahn, British, 17,841 of 1906 (pg. 1)

Zahn, U. S., 849,094 of 1907 (pgs. 1 and 2)

Zahn, German, 189,566 of 1906 (pgs. 1 to 3 of translation)

Zahn, French, 370,821 of 1907 (pgs. 2 and 3 of translation)

Zahn, Canadian, 107,172 of 1907 (pgs. 1, 4, 12, 13 and 14 of specification)

(c) The specification and claims of the patent in suit do not describe and claim the alleged invention

of the Stallman patent with the particularity required by the patents statutes.

(1) The plaintiff testified that his alleged invention was a combination of old elements wherein the guide rail was placed on the stationary race only of the bearing. However, in no place in the entire specification is the alleged invention so described, and the word "stationary" appears only once (page 2, column 1, line 30) in the entire two pages of specification, and then on the basis that it was a "preferred" position rather than that it must be there.

(2) Plaintiff represented during the prosecution of the application (File wrapper Def's. Ex. A pps. 18, 25, 26) in the Patent Office that the bearing would fail unless the rail was so placed, and the testimony given by plaintiff during the trial was to the same effect.

2. Defendant has not infringed any of the four claims in suit of the Stallman patent.

The Keystone Bridge Company vs. The Phoenix Iron Co., 95 U.S. 344, (1877)

D & H Electric Co. vs. M. Stephens Mfg. Inc. et al, 108 USPQ 27, CA9 (1955)

McRoskey vs. Braun Mattress Co., 107 F(2d) 143, CA9 (1939)

Magnavox Co. vs. Hart & Reno et al, 72 F(2d) 433, CA9 (1934)

(a) Plaintiff charging direct infringement in the bill of complaint, did not apply his patent claims

nor in any way discharge his burden which compels him to prove that the Guiderol bearings sold by defendant come within claims 3, 4, 5 and 9 of the patent.

(b) Each claim defines a bearing with an inner and an outer race. Pltf's Ex. 5A, as his example of an alleged infringing bearing has only the outer race, and the corresponding Def's. Ex. I of a smaller size was offered in evidence by defendant, without objection by plaintiff, as representative of Guiderol bearings charged to infringe.

(c) Claims 3, 4, 5 in suit call not only for an inner and outer race in the bearing, but call for "rotatable," "revolving," and "stationary" races, and the unrefuted testimony upon behalf of defendant shows that in most cases, if not all cases, the salesman does not know how the bearing purchased by defendant's customer is to be installed.

(d) Plaintiff testified (Tr. p. 91) that a roller bearing with a race ring, rollers therein, and a guide rail on the race ring fitting into recesses in the rollers was not his bearing if it did not cancel skewing.

(e) The plaintiff obtained his patent including the four claims in suit on the unqualified representation to the Patent Office that the successful operation of his bearing required that the guide rail of the bearing be on the stationary race, and the unrefuted testimony of defendant's vice president was that the defendant's bearings operated

equally well whether the guide rail was on the stationary or upon the rotating race of the bearing. Such unqualified representation by plaintiff cannot be ignored in the consideration of infringement of the four claims in suit.

(f) By reason of the state of the art, and by reason of plaintiff's representations to the Patent Office, claims 3, 4, 5 and 9 of the Stallman patent in suit, are invalid, but if not invalid, must be so narrowly construed that they are not infringed by defendant's Guiderol bearing.

3. The evidence does not support the Verdict of the Jury.

(a) Plaintiff did not discharge his burden insofar as proof of infringement of the claims in suit is concerned. Furthermore, he put in no testimony whatsoever in rebuttal of defendant's clear evidence by testimony, by charts, and by models, that every element and all functions contended for by plaintiff to comprise his patented bearing are in the prior art. Accordingly, the verdict of the jury is contrary to the clear weight of the evidence against infringement, and against the equally clear showing of invalidity of the claims of the Stallman patent in suit.

(b) Defendant's tests and testimony during trial refute plaintiff's theory of operation that his bearing structure and positioning of the guide rail cancels skewing of rollers in the bearing.

(1) Actual demonstrations of the defendant's

bearing viewed by a stroboscopic light showed conclusively that the rollers skew in a bearing where the races are misaligned, and stay skewed during the operation of that bearing.

(2) Plaintiff did not demonstrate accurately the action of a roller when using the straight board with guide rail, and in his Exhibit 5 demonstration, he did not make the rollers visible in the Guiderol bearing in order to try to show that skewing was actually cancelled.

(3) Examination of the Guiderol bearings Pltf's. Ex. 5A, and Def's. Ex. I, show that there is insufficient clearance between rollers packed into the outer race ring to permit skewing and then cancelling of that skewing in each roller, as plaintiff insists will happen.

(4) Furthermore, defendant's witness testified that satisfactory bearing operation was obtained in thousands of installations irrespective of whether the guide rail was on the stationary or upon the rotating race of the bearing installation, all contrary to the representations made by plaintiff both in the Patent Office and during trial.

4. The award of damages on the basis of a 10% royalty of the selling price of Defendant's bearing is not supported by the evidence, and in fact invalidity and non-infringement being shown, no damages should be awarded.

(a) Plaintiff's Exhibits 11 and 12 which plain-

tiff relied upon in contending for a 10% royalty were referred to as "commission statements" during plaintiff's testimony and when offered in evidence (Tr. pps. 57, 58, 59, 60 and 61). In addition to plaintiff's own testimony, the documentary evidence, Def's. Ex. H, shows clearly that the 10% was paid to plaintiff as a commission on certain sales made during the period of the temporary arrangement, and that the 10% was not considered by either the plaintiff or McGill Manufacturing Co., Inc. who paid the sales commission, to be a royalty such as would be paid under a patent license.

(b) Absent proof of infringement of the claims in suit, plaintiff is not entitled to any accounting of damages, the amount of defendant's sales of Guiderol bearings being incorporated in the stipulation subject to defendant's objection to admissibility of such evidence prior to a determination of validity and infringement of the Stallman patent in suit (Stipulation of April 12, and Tr. p. 151).

(c) Defendant's commission on sales of McGill Manufacturing Co. Inc., are in no way involved in the present action, for on August 9, 1954, this action was dismissed for want of jurisdiction as to McGill.

(1) Even if the plaintiff's patent was held valid, and was held to be infringed by defendant's sales of Guiderol bearings, defendant can in no way be held responsible for McGill's sales. Absolute proof of this resides in fact that T. W. Crosby was orig-

inally served for McGill, for himself, and for Casey Bearing Co., and the summons was quashed as to such attempted service on McGill, so that at this time Casey Bearing Company Inc., cannot be held responsible for such sales.

(2) The unrefuted testimony of defendant's vice president was that even as to McGill's sales of Guiderol bearings, such bearings were generally sold only with an outer race assembly, and bearings were installed with the guide rail on the rotating or revolving race of the installation, contrary to the claims of the Stallman patent and plaintiff's own representation as to the operation of his bearing.

(3) The dismissal of the suit against McGill Manufacturing Co. Inc., also emphasizes that plaintiff as early as August 9, 1954, was unable to show that T. W. Crosby was an agent for service on McGill and yet plaintiff retained him as party defendant up to the time of the granting on April 20, 1956, of defendant's motion on to dismiss as to said Crosby.

Conclusion

A judgment notwithstanding the verdict of the jury should be granted upon the present motion as entirely justifiable, for the interpretation of patent claims and questions concerning invalidity involve legal questions which are reviewable by the trial judge.

Therefore, the verdict of the jury and the judgment entered thereon should be set aside, or in the

alternative, a new trial should be granted to defendant for the reasons set forth herein.

/s/ JAS. M. NAYLOR,
NAYLOR & NEAL,

/s/ FOORMAN L. MUELLER,
MUELLER & AICHELE,

Attorneys for Defendant

May 1, 1956.

[Title of District Court and Cause.]

ORDER ON MOTION FOR JUDGMENT NOTWITHSTANDING VERDICT AND IN ALTERNATIVE FOR NEW TRIAL

This cause came on to be heard on the motion by defendant to set aside the verdict and judgment herein, and for an order directing judgment to be entered in accordance with its motion for a directed verdict heretofore made in this action, or in the alternative for a new trial, the Court having considered the written briefs and oral arguments of the parties, and it appearing to the Court that the motion for a directed verdict should have been granted on the ground that the claims of the Stallman patent No. 2,334,227 in suit are, as a matter of law, invalid and not infringed, and that a new trial should be granted in the alternative, it is

Ordered, that the motion to set aside the verdict and judgment and for judgment in accordance with defendant's motion for a directed verdict be granted, and that a judgment be entered for de-

fendant dismissing the action, with costs, and with reasonable attorney's fees in the amount of....., and it is further

Ordered, that the motion for a new trial be granted on the ground that the verdict is against the weight of evidence, provided the order herein for judgment notwithstanding the verdict is reversed on appeal.

Dated: ....., 1956.

.....,
United States District Judge

Acknowledgment of Service attached.

[Endorsed]: Filed May 3, 1956.

[Title of District Court and Cause.]

OPINION UPON MOTION FOR JUDGMENT NOTWITHSTANDING VERDICT

Albert D. Elledge and George B. White, Attorneys for Plaintiff; Naylor & Neal, Jas. M. Naylor, Mueller & Aichele, Foorman L. Mueller, Attorneys for Defendant.

Goodman, District Judge.

This patent infringement suit was tried before a jury. Upon the conclusion of the evidence, defendant moved for a directed verdict in its favor on the ground that the claims in suit were invalid as a matter of law. Believing that the question tendered by the motion warranted a careful study which could more conveniently be made, if necessary, upon a motion for judgment notwithstanding the

verdict, the Court denied the motion for a directed verdict and submitted the cause to the jury. The jury returned a verdict that the four claims in suit were valid and infringed. Defendant thereupon moved for judgment notwithstanding the verdict. An appraisal of the entire record in the light of the oral and written arguments upon the motion, compels the conclusion that the claims in suit are invalid as a matter of law and that the verdict must be set aside and judgment entered for defendant.

The patent in suit, No. 2,334,227, is a combination patent for a roller bearing.[1] Plaintiff's bearing has the basic components common to all roller bearings —two concentric cylindrical races and a number of rollers resting in and substantially filling the space between the races. The significant feature of plaintiff's bearing is the means employed to prevent endwise movement of the rollers and thus confine them in place between the races. Commonly, endwise movement of the rollers is prevented by providing one of the races with a flange at each end. Plaintiff prevents endwise movement of the rollers by providing one of the races with a central rib which projects into a groove indented into the middle of and circumscribing each roller. This central guide rib may be formed as an integral part of the race or may consist of a separate ring resting in a

[1] Although the specification of plaintiff's patent described his bearing structure as particularly suitable when rollers of the needle type are to be employed in the bearing, it states that the structure is equally adaptable to rollers of all dimensions.

groove in the race of lesser depth than the thickness of the ring.

The use of a central guide rib to hold the rollers in position affords a number of advantages. The controversy regarding the validity of plaintiff's patent centers around one of these advantages, to-wit, the ability of the central guide rib to correct any tendency of the rollers to skew. Skewing means the misalignment of a roller with its axis of rotation when the bearing is in operation. Skewing results when, because of a greater load pressure on one portion of the bearing than another, the forward movement of one end of a roller is retarded while the other end moves ahead. In the ordinary roller bearing having a flange at each end of one of the races to maintain the rollers in position, the flanges will limit the degree of misalignment of the rollers, if they skew. But there is no means to restore them to proper alignment. So long as the load pressure on the bearing remains unequal, the skewing will continue and the misalignment may become so pronounced as to produce destructive heat and friction.

If a roller which is held in position by a central guide rib skews, the shoulder of the roller's central groove, which is nearest the forward end of the roller, will contact the guide rib. Sufficient friction will be produced at the point of contact to retard the movement of the forward end of the roller permitting the other end to catch up. The roller will thus be immediately restored to proper alignment. In order that the central guide rib may function in this manner to correct skewing, it must be placed

on only one race and that race must be the one which is stationary when the bearing is in operation.[2]

Plaintiff was not the first to employ a central guide rib on one of the races of a roller bearing to maintain the rollers in position. United States patents No. 1,885,914, to Heim, and No. 585,580 to Kempster, both describe a roller bearing having a central rib on its outer race projecting into a central groove in the rollers to maintain them in position. United States patent No. 747,324, to Kempster, claims a central guide rib on both the inner and outer races. A variation of this construction wherein only the inner race is provided with the central guide rib is suggested by the specification of this patent and illustrated in figures 4 and 5 of the drawings.[3] These three prior art patents do not claim the correction of skewing as one of the ad-

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[2] Whether the central guide rib actually functions in the above-described manner to correct skewing, and, if it does so, whether its placement on the stationary race of the bearing is essential to this function, were both vigorously contested issues of fact at the trial. For purposes of the present motion, the facts are taken to be in accordance with the contentions of plaintiff.

[3] The structure of the Heim bearing differs from that of plaintiff's bearing in that the outer race of the Heim bearing is formed in two sections arranged in alignment. But, this feature is for convenience of manufacture, and is obviously not necessary for the operation of the bearing. The claims of Kempster patent No. 585,580 include separator disks between the rollers as an element of the bearing. Separator disks are not employed in plaintiff's bearing. Five of the claims of Kempster patent No. 747,324 include such separator disks, but claim 6

vantages of the central guide rib. Nor do they indicate that it is of any consequence whether the central guide rib is on the stationary or the rotating race when the bearing is in operation.

Plaintiff claims that he achieved invention in being the first to perceive the advantage of the central guide rib as a means of correcting skewing and to specify that the rib must be placed on the stationary race if this advantage is to be realized.[4] However, in specifying the placement of the central guide rib on the stationary race, plaintiff does not call for any different combination of elements

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does not, and the specification states that the separators may be entirely dispensed with, if so desired. It is apparent from a consideration of both Kempster patents that the separators would also not be necessary to the operation of the bearing described in Kempster patent No. 585,580.

[4] Actually plaintiff's patent does not make it clear that the skewing correcting function of the central guide rib depends upon its placement on the race which will be stationary when the bearing is in operation. Eight of the patent's nine claims specify the placement of the central guide rib on the stationary race. Claim 9, one of the four claims in suits, does not. The specification of the patent does not indicate that the claims which specify the placement of the central guide rib on the stationary race, do so because such arrangement is necessary if the rib is to function to correct skewing. The specification merely states, without explaining why, that it is preferable that the central guide rib be placed on the race which will be stationary in operation. Consequently, defendant contends that plaintiff's patent is invalid for failure to adequately describe his invention as required by statute. 35 USC §33. As well, defendant contends that, since the provision that the central guide rib be placed on the stationary race was added to claims one

in the bearing structure itself than is revealed in the prior art. Which of the two races of a roller bearing will be stationary when the bearing is in operation depends upon the use to which the bearing is put. In some applications the outer race of the bearing will be stationary and the inner race will rotate; in other applications the inner race will be stationary and the outer race will rotate. Both applications requiring inner-race rotation and those requiring outer-race rotation are old and common. In order to produce bearings which would conform to plaintiff's description one would simply have to make two types of bearings—one type with the central guide rib on the inner race and the other type with the rib on the outer race. The bearing with the rib on the inner race could then be supplied for applications requiring outer race rotation, and the bearing with the rib on the outer race could be supplied for applications requiring inner race rotation.

But, as has been noted, the prior art reveals both a bearing with the central guide rib on the outer race and a bearing with the guide rib on the inner race. Either type of these bearings could be appropriately employed in applications in which the race having the guide rib would be stationary.[5]

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through eight by way of amendment, such claims are void as claims for new matter unsupported by a supplemental oath.

Although there is merit to both of these contentions, we do not reach them in view of the conclusion that plaintiff's patent is invalid for lack of invention.

[5] The Heim patent and the Kempster patent, No. 585,580 for a bearing with the central guide rib on

It is apparent that the extent of plaintiff's contribution to the art was to point out that old devices had a theretofore unperceived advantage which would be realized in some old and common applications, but not in others. In the words of the Supreme Court in General Electric Co. vs. Jewel Incandescent Lamp Co., 326 U.S. 242, 249 (1945), "that did not advance the frontiers of science in this narrow field so as to satisfy the exacting standards of our patent system. Where there has been use of an article or where the method of its manufacture is known, more than a new advantage of the product must be discovered in order to claim invention." This is so even though the recognition of the new advantage may benefit industry and bring new commercial success to the product.

Thus, solely from the comparison of the prior art with the teaching of plaintiff's patent, without weighing the testimony of any witnesses, expert or otherwise, the only reasonable conclusion that can

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the outer race both illustrate the bearing as it might be employed in the hub of a wheel. If the bearing were so employed, the outer race having the central guide rib would be the rotating race. But, there is nothing in the specification of either patent to suggest the bearing could not be employed as well in applications wherein the outer race would be stationary.

The Kempster patent, No. 747,324, which depicts in figures 4 and 5 a bearing with the central guide rib on the inner race, does not illustrate any application of the bearing. But, the specification states that the bearing design is especially appropriate for sheaves of pulley-blocks and wheel-hubs. In these applications, the inner race with the central guide rib would be stationary.

be drawn is that the patent is invalid. The verdict of the jury must therefore be set aside and judgment entered in favor of defendant. Cutter Laboratories, Inc., vs. Lyophile-Cryochem Corp., 179 F.2d 80, 84 (9 Cir. 1949).

Present judgment accordingly.

Dated: July 31, 1956.

[Endorsed]: Filed August 1, 1956.

In the United States District Court, Northern District of California, Southern Division

Civil Action No. 33,567

RALPH F. STALLMAN, Plaintiff,

vs.

CASEY BEARING COMPANY, INC., Defendant.

JUDGMENT

Defendant's Motion For Judgment Notwithstanding the Verdict having come on regularly for hearing, upon the record herein, and the matter having been fully briefed and argued, the Court having rendered a written opinion on July 31st, 1956 directing that the verdict of the jury be set aside and that judgment be entered in favor of defendant herein, it is hereby

Ordered, Adjudged and Decreed that:

1. Stallman patent No. 2,334,227 is invalid.

2. The verdict of the jury recorded herein on April 23rd, 1956, finding claims 3, 4, 5 and 9 of

Stallman patent No. 2,334,227 valid and infringed by the defendant, and awarding damages in the sum of $3,683.51, and the judgment based thereon entered on April 25, 1956, are hereby set aside.

3. Judgment is hereby entered for the defendant dismissing the action, with costs to the defendant in the amount of $....., as taxed by the Clerk of the Court.

Dated: August 8, 1956.

/s/ LOUIS GOODMAN,
United States District Judge

Approved as to Form:

ALBERT D. ELLEDGE,
GEORGE B. WHITE,
/s/ By GEORGE B. WHITE,
Attorneys for Plaintiff

[Endorsed]: Filed August 8, 1956.

[Title of District Court and Cause.]

NOTICE OF APPEAL

Notice is hereby given that Ralph F. Stallman, the plaintiff above named, hereby appeals to the United States Court of Appeals for the Ninth Circuit, from the final judgment notwithstanding the verdict entered in this action on August 8, 1956.

Dated: September 7, 1956.

GEORGE B. WHITE,
ALBERT D. ELLEDGE,
/s/ By GEORGE B. WHITE,
Attorneys for Plaintiff

[Endorsed]: Filed September 7, 1956.

[Title of District Court and Cause.]

CASH DEPOSIT IN LIEU OF SURETY FOR COST BOND ON APPEAL

To the Clerk of the United States District Court, Northern District of California, Southern Division:

Whereas, on August 8, 1956, judgment against the plaintiff Ralph F. Stallman was entered in the above entitled case and said plaintiff has filed a notice of appeal from said judgment,

Now, Therefore, said plaintiff deposits with you herewith the sum of Two Hundred and Fifty ($250.00) Dollars cash, of which said plaintiff Ralph F. Stallman is the owner, said money to be held and disbursed by you as security for costs on appeal as follows, to wit:

The condition upon which said deposit is made. is that if the said Ralph F. Stallman shall prosecute his appeal with effect, and pay all costs if the appeal is dismissed or the judgment affirmed, or such costs as the appellate court may award if the judgment is modified, then said deposit shall be returned to said plaintiff, otherwise to be applied by you to pay such costs, and the balance, if any, returned to said plaintiff.

Said plaintiff agrees by and through its undersigned attorney that in case of default or contumacy on plaintiff's part, the court may upon notice to him of not less than ten (10) days proceed summarily and render judgment against said

plaintiff in accordance with his obligation above recited and award execution thereon.

/s/ RALPH F. STALLMAN,
/s/ By GEORGE B. WHITE,
Attorney in fact for Appellant
Ralph F. Stallman

Duly Verified.

[Endorsed]: Filed September 7, 1956.

[Title of District Court and Cause.]

CERTIFICATE OF CLERK

I, C. W. Calbreath, Clerk of the United States District Court for the Northern District of California, do hereby certify the foregoing and accompanying documents and exhibits, listed below, are the originals filed in this Court in the above-entitled case and constitute the record on appeal herein as designated by the attorneys for the appellant:

Excerpt from Docket Entries.

Complaint.

Notice of Hearing and Motion of Defendant, McGill Mfg. Co. to Quash, etc.

Memo. in Support of Motion to Quash.

Affidavit of Robert D. Anderson in Support of Motion to Quash

Affidavit of Thomas W. Crosby in Support of Motion to Quash.

Order Extending Time for Casey Bearing Co. and T. W. Crosby to Plead.

Affidavit of Charles S. McGill in Support of McGill to Quash.

Interrogatories by Plaintiff to Defendants.

Answer of McGill to certain of Plaintiff's Interrogatories.

Answer of Casey Bearing Co. to certain of Plaintiff's Interrogatories.

Order Quashing Service of Summons.

Interrogatories by Defendant to Plaintiff.

Answer of Casey Bearing Co. and T. W. Crosby to Complaint.

Answer of Plaintiff to Interrogatories by Defendant.

Interrogatories by Plaintiff to Casey Bearing Co. and T. W. Crosby.

Answer of T. W. Crosby for himself and as President of Casey Bearing Company to interrogs. by Plaintiff.

Notice by Defendants of Hearing and Objections to Interrogatories.

Reply of Plaintiff to Objections of Defendants to interrogs. 25, 26 and 29.

Clarification by Plaintiff re Objections to Interrogatories.

Order Removing Objections to Interrogatories from Calendar.

Notice by Defendant of Additional Prior Art to be Relied Upon at Trial.

Stipulation re Subpoena to Defendant Thomas W. Crosby.

Verdict.

Judgment on Verdict.

Motion of Defendant for Judgment Notwithstanding Verdict and Motion for New Trial.

Affidavit of Foorman L. Mueller in Support of Motion.

Memorandum of Costs by Plaintiff.

Amended Memorandum of Costs by Plaintiff.

Opinion of Court on Motion for Judgment Notwithstanding Verdict.

Judgment.

Memorandum of Costs by Defendant.

Notice by Plaintiff of Motion to review taxation of Costs.

Notice of Appeal.

Appeal Bond.

Designation of Record on Appeal.

Order Relative to Costs.

Deposition of Ralph F. Stallman and Deposition of Thomas W. Crosby.

Reporter's Transcript of Proceedings, August 9, 1954.

Reporter's Trancript of Proceedings, April 18, 19, 20, and 23, 1956.

Plaintiff's Exhibits 1, 2, 3, 4, 5, 5-a, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17.

Defendants' Exhibits: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, S-1, S-2, S-3, T, T-1, T-2, T-3, U, V, W, X, X-1, and Y.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said District Court this 16th day of October, 1956.

[Seal] C. W. CALBREATH,
Clerk

/s/ By MARGARET P. BLAIR,
Deputy Clerk

In the United States District Court, Northern District of California, Southern Division.

No. 33567

RALPH F. STALLMAN, Plaintiff,

vs.

CASEY BEARING COMPANY, INC, a corporation; and T. W. CROSBY,

Defendants.

REPORTER'S TRANSCRIPT

Wednesday, April 18, 1956

Before: Hon. Louis E. Goodman, Judge.

Appearances: For the Plaintiff: George B. White, Esq., Albert D. Elledge, Esq. For the Defendant: James M. Naylor, Esq., Foorman L. Mueller, Esq.

(A jury was duly impanelled and sworn to try the cause, after which statements were made by respective counsel as follows:) [1*]

* * * * *

RALPH F. STALLMAN

the plaintiff herein, called as a witness in his own behalf; sworn.

Q. (By the Clerk): Will you state your name to the Court and jury?

A. Ralph Frederick Stallman.

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* Page numbering appearing at top of page of Reporter's original Transcript of Record.

(Testimony of Ralph F. Stallman.)

Direct Examination

Q. (By Mr. White): What is your address, Mr. Stallman? A. 4800 Reinhardt Drive, Oakland.

Q. What is your occupation?

A. I am a sales engineer.

Q. I will show you patent No. —— [14]

* * * * *

Mr. White: If Your Honor please, I offer the United States Patent No. 2,334,227 in evidence as Plaintiff's Exhibit 1.

(Whereupon the patent in suit, No. 2,334,227 was received in evidence and marked Plaintiff's Exhibit No. 1.)

[See Book of Exhibits.]

Q. (By Mr. White): Mr. Stallman, I hand you a copy of the patent. Will you explain to the jury in general what your patent pertains to, Plaintiff's Exhibit 1?

A. The patent is on the method of cancelling skewing when it occurs in a bearing.

Q. Will you explain what skewing is?

A. Skewing is the action that a roller in a bearing has under load to go askew or cock itself on a race, which causes terrific friction.

* * * * *

Q. (By Mr. White): Will you demonstrate skewing on this Plaintiff's Exhibit 2 for identification? [15]

A. Skewing is when a roller goes off access, which would cause drag on the bearing, terrific friction, and cause the shaft in the bearing to act er-

(Testimony of Ralph F. Stallman.)

ratic. In this roller skewing is cancelled, as you can see. We will start off as skewing out. When we get to the bottom of that track, the roller is perfectly straight. Either way I can do that, and by the time we get to the bottom of that track the roller is straight. It is self-correcting in action. That is the first time this has ever been done.

Q. In your patent all the rollers are running on a track or guide rail like the one you are demonstrating?

A. Yes, this should be considered in the form of a circular ring, such as you see in that bearing that Mr. White showed. We show it in a plane so we can demonstrate it, but this would really be a large circular ring in which a full number of rollers are revolving. The action is the same.

* * * * *

Q. (By Mr. White): I hand you at this time Plaintiff's Exhibit 3 for identification and I ask you to describe what that is.

A. This is the outer race and the rollers of [16] a roller bearing in which the rollers have a centrally reduced portion, such as this roller; that portion is engageable with a race, a ring on this outer race, similar to this ring which we have shown here. The rollers race around here and they are guided in their travel on this central rail, which keeps them straight and keeps the roller running on its proper axis and keeps friction out of the bearing.

Q. When you were referring to "this here," you

(Testimony of Ralph F. Stallman.)

were referring to the bearing, Plaintiff's Exhibit 3 for identification, is that right? A. Yes.

* * * * *

Q. (By Mr. White): Mr. Stallman, will you look at Plaintiff's Exhibit 4 for identification and explain what it is?

A. In all of these figures?

Q. Not the figure first. What is that?

A. That is a copy of the drawing in my patent.

Q. It is an enlarged photostatic copy of the drawing in your patent, is that right? [17]

A. Yes.

Q. I would like you to point out, referring to the colors that they are colored, these various parts.

A. The colors in this case show pink as the outer race in all of these, under here as well; yellow as the rollers in between these races, this one in here (indicating); blue as the inner race which is mounted on the shaft, or blue as the race that does not carry the guide rail. You will notice this race does not have a guide rail. It is shown here, it is shown here, it is shown here (indicating). The pink stationary race in all cases carries the guide rail. Here is the guide rail shown in red. Here it is again in circular form. Here is the guide rail shown in the form such as we just talked about here.

Q. When you say "here" you refer to the exhibit—— A. The exhibit is this Exhibit 1.

Q. I believe that is Exhibit 2. Point out if you can the skewing action of the rollers as it may be

(Testimony of Ralph F. Stallman.)

demonstrated on that large photocopy of the patent drawings, Plaintiff's Exhibit 4 for identification.

A. This shows in my invention a roller skew in which case this is contacting the rail exactly as it did here.

Q. When you refer to "this" will you refer to the figure number on which that is shown, for the record?

A. In Figure 7 we have the roller which is [18] contacting the rail as shown and is contacting at this Figure A, and as that contacts Figure A that brings about the correction of the roll the same as the contact brought about the correction of the roll on this board. We are comparing this with the older style bearings which this bearing has replaced. In the old style bearing the roller contacted this side, and as it contacted the side it would just bind here and tip. This other bearing, as it contacted the rail, is contacting it off center and it would straighten. This is heavy at one end. I can't describe that.

Q. (By the Court): Mr. Stallman, look at that Exhibit 2. What is it that you said corrects the skewing? The rail with the slat running along it?

A. The raised rail with this roller shoulder contacting the rail on one side, and you will notice that roll has a longer end beyond that shoulder than it has at the leading end. Our purpose is to cause this trailing end in the roller to catch up with the leading end, and we do that by contacting it off balance, you may say, and bringing it back on balance.

(Testimony of Ralph F. Stallman.)

Q. If each side of the roller were of equal length, you would still have skewing?

A. Each side of the roller is of equal length.

Q. You said this side was longer than the other.

A. We contacted it at but one side under here with this rail. We contacted off balance to bring it into balance, [19] but the roller is otherwise symmetrical.

* * * * *

Q. (By Mr. White): Mr. Stallman, I would like you to explain what Plaintiff's Exhibit 5 for identification is.

A. This is a machine that was made to show bearings.

Q. Who made it? A. I made that.

Q. All right.

A. That is made to show bearings in their actual in a representative machine, and we have here the outer race of the bearing, which is stationary in these end blocks; we have the inner race of the bearing which is pressed to the shaft so that it becomes a part of the shaft and is a revolving part. We have the rollers in between. Now, this exhibit shows that the shaft runs very free.

Q. Will you place a load upon the shaft and explain how you put the load on there?

A. In placing a load upon the shaft, we are doing just what happens in every loaded machine. We have to pull this down to represent a load. We pull it down as tight as we can until this bottoms on the plate. Our bearing still revolves, [20] a little

(Testimony of Ralph F. Stallman.)

more sluggish because we are building up friction due to load, which happens in any bearing, but the rollers in that bearing are running perfectly and there is no drag on that. That is under quite a severe load.

Q. Will you point out the condition of the base plate when you pull that load off?

A. To show the load that that bearing is on, that base plate is actually bowed. The shaft is likewise bowed. We have put a terrific load on those screws in the center member.

Q. How would that action you have demonstrated compare with a regular roller bearing?

A. That is what is happening in any of them.

Q. How could you demonstrate that, if you can?

A. We are demonstrating shaft action in a bearing which is happening in every machine, large or small, to some degree.

Q. You are demonstrating now with a roller made in accordance with your patent?

A. Yes.

Q. Could you demonstrate also with a regular roller bearing?

A. Yes, there is a block of wood that I would like to have. Could I show the jury the way that shaft is turning?

The Court: I do not know what your attorney wants you to do.

Mr. White: May it be permitted for some of [21] the jurors to see how it rotates in comparison with the next test?

(Testimony of Ralph F. Stallman.)

The Court: I think the witness can demonstrate that.

Q. (By Mr. White): Substitute now, if you will, bearings made in accordance with the patents, the regular roller bearing. When you do that you might describe what we call here a regular roller bearing.

A. A regular roller bearing is the bearing that was used everywhere in industry for, oh, at least 20 years, perhaps 25 years, and it is shown in this sketch.

Q. To what figure are you pointing?

A. This is Figure 6. That is the type of bearing that we started out to correct. [22]

* * * * *

Q. (By Mr. White): Mr. Stallman, during the recess you did something to that machine model, Plaintiff's Exhibit 5 for identification. Will you explain what you did?

A. Yes. I substituted for these two bearings which are manufactured under my patent for two of the old style. The one under my patent is in Figure 7, center guide, or two of the old style in Figure 6.

Q. Mr. Stallman, would you step back so that His Honor will be able to follow your pointer?

A. Yes. The bearings that were removed from that machine are these shown in Figure 7. The substituted bearings are in Figure 6.

The load was applied in the same fashion in all of the bearings, and to demonstrate the friction in

(Testimony of Ralph F. Stallman.)

this bearing, it is very easy to see, when you reverse that thing it practically locks up. And that is the condition that applied to all of these bearings in a greater or lesser degree wherever I have seen them applied, and that goes on for quite a long time.

Q. About how long were you connected with the bearing business?

A. I have been on this particular bearing for over 20 years.

Q. What do you mean, this particular bearing?

A. This needle bearing. I have been on the needle bearing in both Figure 6 and Figure 7—or Figure 6, rather, [23] for 20 years. I have been in the bearing business for longer than that.

Q. Just in general, what causes the locking that you demonstrated there of the plain rollers of the type shown in Figure 6 of the patent?

A. Of all the bearings out in service in Figure 6, we know that the load applied on one end of the roller when greater than the other end, will cause those rollers to skew as you see. The moment they skew they bear at one end of the roller and set up a friction which causes the roller to skew to a greater degree, and that goes on until the bearing practically locks up.

Q. And wherein is the difference between that and the bearing of your invention as shown in Figure 7 of the patent?

A. In Figure 7 we have a roller with a central groove that contacts a central rail, and as this roller rolls against that rail in a skewed position, it con-

(Testimony of Ralph F. Stallman.)

tacts at this point and not the end. Now, in contacting at this point it is setting up an unbalance or leverage in that roll that causes the retarded end to overtake the leading end, bringing it back in alignment. Now, once in alignment, it is very likely called upon to ever perform that function again; it is more or less in balance. Therefore the friction is very low.

Q. (By the Court): What specifically brings about or causes it to come back into line again? [24]

A. This inner race which we show—or this other race which we show without a guide rail propelled this roller equally across its surface.

Q. That is not clear to me, that the outer race does that. Take that No. 3. Where is there? There it is right there. What is it specifically in the physical make-up that causes this skewing as you say to be corrected?

A. As this roller skews, it rolls against this rail at this point. Now, that point is on the leading edge of the roll and it is of a lesser distance than the distance from this shoulder to the other end of the roll, so the greater distance overcomes the lesser distance unless the roll rolls freely.

Q. So, then, what I asked you before is correct: It is a matter of the distance involved on the one side of the bearing that you say causes the balance, the balancing. A. Yes.

Q. It is a matter of the distance involved?

A. Yes.

Q. (By Mr. White): The distance from where,

(Testimony of Ralph F. Stallman.)

Mr. Stallman? Will you point out and explain it? Is it the distance from the point of contact?

A. The distance from the point of contact to the trailing edge.

Q. The point of contact between what? [25]

A. The point of contact between the rail and the shoulder of the roller to the trailing edge of the bearing is greater than the leading edge, so it will naturally throw that roll over into balance.

Q. What kind of force would you call it that works at the point of contact between the shoulder and the rail of the bearing? What would be the description of the force?

A. That is a frictional force.

Q. (By the Court): That is the essential element in the method of preventing skewing, as you claim it?

A. Yes, the way we apply the friction to bring about the correction.

Q. The slot itself and the track do not bring that about except for that arrangement by which the distances are made different, is that right?

A. Yes, the distances, the clearances.

The Court: I am only asking these questions to try to get it clear to the jury, that is all, because if it is clear to me, I think it will be clear to the jury.

Q. (By Mr. White): Well, let's explain, to clarify this further, Mr. Stallman. Is one side of the roller the same as the other as it is made?

A. Yes, the roller is symmetrical.

Q. Does symmetrical mean that the reduced por-

(Testimony of Ralph F. Stallman.)

tion or groove on the roller is in the middle? [26]

A. Yes.

Q. Now, when you are talking about the distances, what are you talking about? What do you refer to—these uneven distances?

A. The uneven distances are brought about by the method of applying the friction that we use.

Q. What is that distance?

A. That distance is——

Q. From where?

A. From the shoulder to the end of the roll which is a greater distance than from the shoulder——

Q. From which shoulder? You see, you are pointing, and the record does not show to what you are pointing.

A. The correction comes about by the engagement of the shoulder farthest from the end of the roller. Now, that would be this shoulder farthest from the end of the roller, which is a greater distance than the short end of the roller (indicating).

Q. What causes the skewing?

The skewing is caused by the load applied to the bearings. As the load becomes uneven, it comes on one end of the roll to a greater degree than the other and the free end of the roller runs along freely while the loaded end is retarded.

Q. Which is the loaded end, for instance, when you show it in a skewed position? [27]

A. If this roller was skewed in this direction, the loaded end would have been this direction.

(Testimony of Ralph F. Stallman.)

Q. Which is "this"? Is that the retarded or advanced part? A. That is the retarded.

Q. You mean to say that the retarded part has a bigger load and that is why it is held back; is that right? A. Yes.

The Court: Why has it got a bigger load?

A. Because the shaft deflection would cause a heavy load on one end. You see, the load is applied to this bearing through the pressure of the inner race on the bearing as demonstrated here.

Q. Now, look, Mr. Stallman. The distance from the outer edge to the inner edge of this roller is the same as the distance from the inner edge to the outer edge of this roller, isn't it? A. Yes.

Q. So therefore these are of equal length, these two rollers on each side of the so-called slot.

A. Yes.

Q. If you call it that. A. Yes.

Q. Of course, naturally, it wouldn't take a Philadelphia lawyer to see that the distance from here to here is greater [28] than the distance from here to here. That isn't the basis of your claim, is it?

A. That is what brings about the correction of this skewing.

Mr. White: Yes, but there are forces which bring about that skewing, aren't there? A. Yes.

The Court: There must be something else besides the distances involved. You haven't made that clear yet.

A. In a roller bearing, an anti-friction bearing, the word "anti-friction" means lack of friction.

(Testimony of Ralph F. Stallman.)

Now, a roller bearing theoretically should have no friction; but in making correction, friction is brought into that roller momentarily to accomplish that correction.

Q. (By the Court): What is the correction that you make?

A. We bring it back onto its axis so it does not have any more force or pressure on that central rail. In normal action that roller should not contact that rail; only when skewing comes about does the roller correct.

Q. (By Mr. White) Mr. Stallman, when a shaft rotates, then it sets ups certain uneven forces on the opposite ends or near the opposite ends of the rollers; is that right? A. Yes, sir.

Q. Now, one would be greater than the other, wouldn't it? The force on one end would be greater than the other one? A. Yes. [29]

Q. Now, what happens on the side where the force becomes greater when it is unbalanced?

A. The roller is squeezed and it is retarded.

Q. It is slowed down, then?

A. It is slowed down, yes.

Q. All right. And what happens to the other side of the roller?

A. It is not squeezed; it is lightly loaded and it advances ahead of the other end—of the loaded end.

Q. So one side slows down and the other speeds up in rolling and it is not straight any more; is that right? A. That's right.

(Testimony of Ralph F. Stallman.)

Q. When the shoulder on that side contacts the rail, what happens there?

A. We are setting up a frictional force.

Q. And that frictional force is what? What does the frictional force do?

A. It retards the advanced end of the roller and brings it back in alignment with the retarded end of the roller.

Q. Slows down that roller, is that what you mean? A. Yes.

Q. It slows down the side of the roller which was ahead? A. That's right.

Q. By the frictional force, and when it slows down then the other side speeds up? [30]

A. Yes.

Q. Is that correct? A. Yes.

The Court: There were bearings before that were constructed as this one was, going on a slot?

A. This one? These that we are talking about? Never. The appearance of this bearing is the first in the history of the industry.

The Court: You better develop it yourself, Mr. White. It isn't clear to me yet. Maybe you can develop it.

The Witness: Now, there has been nobody, as far as I can find out——

The Court: Well, the attorney will argue it. I am trying to get the fact. You go ahead, Mr. White, and develop it your own way.

Q. (By Mr. White): I would like you to take in hand one of these roller bearings from the model

(Testimony of Ralph F. Stallman.)

machine, Plaintiff's Exhibit 5, which you first demonstrated.

A. This—These are the two bearings that were removed.

Q. To your knowledge, that is a bearing which is sold by the defendant Casey Bearing Company in this case? A. Yes.

Q. And will you point out on that an inner race?

A. The inner race is this part on the shaft that is pressed to the shaft and becomes a part of it. [31]

Q. Did that come with the bearing?

A. Yes.

Q. And you pressed it in the shaft?

A. Yes.

Q. Is that inner race rotatable? A. Yes.

Q. And point out the outer race on that bearing.

A. The outer race is the one I have.

Q. And this application, is that relatively stationary? A. Yes.

Q. What does relatively stationary mean, anyway? A. It is not revolving.

Q. Point out the rollers, if you can, between the inner and the outer races on that bearing.

A. The rollers are these rollers between the inner and the outer race.

Q. And have those rollers in that bearing aligned reduced portions? A. Yes.

Q. Can you point it out in the bearing?

A. I can by taking this bearing apart, but I can point it out in Figure 1. [32]

* * * * *

(Testimony of Ralph F. Stallman.)

Q. (By Mr. White): It has in it exactly the same kind of a reduced portion as shown in your patent? A. Yes.

Q. It has in it a ring which is carried by the outer race? A. Yes.

Q. Does that project into the reduced portions of the rollers? A. Yes.

Q. Does it prevent the longitudinal movement of the rollers? A. Yes.

Q. It has in it a second ring? A. Yes.

Q. For the purpose of holding them in place? A. Yes.

Q. Now, in this case is there any projection or ring on the rotatable race or on the inner race?

A. No.

Q. Is the inner race moved? A. Yes. [33]

Q. There is nothing on it? A. No.

Q. Now, then, if you would repeat again with reference to this misalignment, first, if you would explain it better. Apparently His Honor didn't clearly understand it and therefore we can assume that the jury might need further explanation as to what are the forces which are acting which cause the misalignment of roller bearings and this so-called skewing and which are the forces that are set up in the bearing of your patent which act to keep them straight and to correct the misalignment. And talk in terms of the forces as they are exerted, instead of just shoulders and bumps and distances.

A. The forces come about this way: this inner race in Figure 1 is mounted on a shaft which is

(Testimony of Ralph F. Stallman.)

subject to all the movements of the machine—deflection, vibration, shock, oscillation. All of the forces that come into a machine in action are exerted on the shaft into this race, which in turn exerts those forces through these rollers into the outer stationary race. Now, in exerting the forces when this shaft bends—and it surely bends as demonstrated here—when it bends——

Q. When you said "here," you were referring to—— A. Demonstrated on the model. [34]

Q. On the machine, Plaintiff's Exhibit 5.

A. Now, as that shaft deflects, a higher pressure is created at one end of this sleeve or in a race than it is at the other. Now, when this higher pressure is exerted on the sleeve, it tends to crush or flatten the rollers under that load. The flattening of the rollers decreases their diameter so that the unloaded or the lightly loaded portion of those rolls being normal will advance in their usual path, but this heavily loaded end will be retarded. Now,——

Q. What would happen if there was nothing there to correct that skewing or misalignment?

A. The roller would just run completely out of the bearing and it would destroy itself.

Q. If it couldn't run out of the bearing because it was held by the ends, then what would happen?

A. If it is held by the ends as in Figure 6, it sets up a terrific pressure, pressure which actually excites it to skew to a greater degree, and the condition is aggravated until the friction is so great

(Testimony of Ralph F. Stallman.)

that the bearing would either lock the shaft or destroy itself, or at least would set up so much friction it wouldn't be exactly practical.

Q. All right. Now you can tell us what forces you set up in terms of forces to correct that—what forces your invention sets up.

A. In Figure 7 all of the forces in this bearing in rotating [35] would be normal bearing forces. The particular forces that are set up in this style bearing are heavily loaded conditions on one end of the shaft, which would be the retarded end, because these rollers are run in this direction——

Q. When you say "in this direction," that is downwardly on that bearing?

A. The arrow points in the downward direction. Now, these rollers would become locked up if they did not have this center guide. They would start to lock up here and it would advance——

Q. When you were referring to "here," you were referring to the retarded end?

A. The retarded end. They would start to lock up the retarded end. The free end would advance until it took all of the rollers and put them in the same position. Now, in this style bearing in Figure 7 before any great amount of skewing is created, the roll contacts the rail at that point. Now, we introduce a friction—far less friction at this point than you have at that, it is true, but we exert sufficient friction to bring about the correction of that roll, because we actually put the brake on that

(Testimony of Ralph F. Stallman.)

point, to permit this retarded end to come up even with the advanced end.

Q. When you say at that point, you mean you put the brake on on the advanced half of the roller?

A. We put the brake on the advanced half of the roller. [36]

The Court: How do you do that?

A. By its contact with this rail and this shoulder as demonstrated here. Now, if we put the brake on at the advanced end of the roller, the retarded end has to catch up to it and put it straight ahead.

The Court: How do you get that brake on? I am asking these questions to help the jury.

A. That brake is effected by contacting this shoulder of the bearing with the stationary guide rail.

Q. How do you do that? How is that brought about?

A. By rolling into it, the same as an automobile wheel would roll into a curb. The minute you hit a curb with an automobile wheel, there is a terrific friction created and that is what is happening here.

Q. Well, if it takes a force to bring an automobile wheel into contact with a curb, turning it into a curb, how do you do that with this?

A. This force has already been introduced into the bearing through the misalignment of the shaft such as we showed in this model.

Q. (By Mr. White): In other words, it is self-aligning, the force which caused the misalignment

(Testimony of Ralph F. Stallman.)

will exert the force of friction between the shoulder of the advanced portion of the roller and the guide rail? A. Yes. [37]

Q. To slow down the advanced portion, is that right?

A. Yes. In normal bearing use, we have these forces. My device corrects those forces. Now, the forces are brought about by the normal running of this type of bearing. The guiding force as we introduced it puts the brake on in the portion of the roll that is leading and retards that portion until the retarded portion of the roll catches up; then the roll runs practically free in its forward half.

The Court: Has that got anything to do with the weight of one side or the other of the bearing?

A. None whatever.

Q. (By Mr. White): Mr. Stallman, do you know Mr. Crosby, the defendant in this case? A. Yes.

Q. How have you known him?

A. I have known Mr. Crosby through the bearing business.

Q. Did you have any occasion to discuss your patent with him, the patent involved in this suit?

A. Yes.

Q. About when was that?

A. Oh, to the best of my recollection, that would be about 1947 or '48.

Q. Where did you talk to him about your patent at the time?

A. Right in front of his store on Golden Gate Avenue.

(Testimony of Ralph F. Stallman.)

Q. Was there anybody else present? [38]

A. No, just Crosby and myself.

Q. And so far as you remember, what was the substance of that conversation?

A. Well, I talked——

The Court: Why don't you sit down?

The Witness: Thank you.

I talked to Mr. Crosby and in my enthusiasm I showed him a fine new bearing, and he suggested that I take that bearing and show it to Mr. McGill.

Q. What was his connection with Mr. McGill, to your knowledge?

A. Well, I believe Mr. McGill, Mr. Crosby is related to Mr. McGill through marriage, I believe.

Q. And as I understand, Mr. Crosby suggested that you see Mr. McGill. A. Yes.

Q. Who is Mr. McGill?

A. Mr. Charles McGill is president of McGill Manufacturing Company who manufacture this bearing.

Q. And after that suggestion, did you see Mr. McGill? A. Yes.

Q. Where?

A. Back at the factory in Valparaiso, Indiana.

Q. About when?

A. I would say that was in 1948. [39]

Q. And did you reach any sort of arrangement with the McGill Manufacturing Company?

A. Yes, our meetings terminated in a contract.

* * * * *

Q. (By Mr. White): Mr. Stallman, when you

(Testimony of Ralph F. Stallman.)

referred to a contract previously, did you refer to this letter of June 23, 1948? A. Yes.

Q. In general, was there anything done in pursuance to that letter of June 23, 1948?

A. Oh, yes, they manufactured my bearing, they paid me royalties on it; I gave them a great deal of help and it was a very nice arrangement. [41]

* * * * *

Q. (By Mr. White): I will show you here a catalogue entitled "Guiderol McGill Precision Bearings," and I ask you whether you can identify that as to what it is.

A. Yes, that is the first catalogue that ever came to my notice. It is a complete catalogue on my bearing; it has the patent number right on it, and it describes my bearing very much——

The Court: Well, that is the catalogue that the McGill Manufacturing Company got out, is that right? A. Yes.

Q. And distributed? A. Yes.

Q. (By Mr. White): And that was subsequent and in accordance with that letter of June 23, 1948; is that right? A. Yes.

Q. And that is the catalogue that to your knowledge was used in connection with the sale of these Guiderol bearings? A. Yes.

Q. And those Guiderol bearings were the same as you demonstrated here as Plaintiff's Exhibit 5-A for identification? A. Yes. [46]

* * * * *

Q. (By Mr. White): About how soon after the

(Testimony of Ralph F. Stallman.)

letter of 1948 were those catalogues, so far as you know, sent out?

A. From my memory, it would be from a year to a year and a half later.

Q. And were they prior to the commencement of this suit? A. Oh, yes.

Q. Long prior? A. Yes.

Q. And were they also mailed to you?

A. Yes, they came into my possession either at the local plant or through the mail. I can't recall that far back, but I think they were mailed.

Q. To your knowledge is that the same catalogue which was used prior to the filing of this suit by the defendant Casey Bearing Company in the sale of this Guiderol bearing? A. Yes. [47]

* * * * *

Q. (By Mr. White): How long did that relation under the letter of June 23rd, 1948 continue with McGill Manufacturing Company for the manufacture and sale of Guiderol bearings?

A. What is that question again? When did it——

The Court: How long did it continue?

A. Three and a half or four years.

Q. (By Mr. White): I show you a photostatic copy of a letter of December 6, 1950, which might refresh your memory as to the length of time that your relation continued with McGill.

A. Yes, this is the notification of the termination.

Q. What was the date of that?

(Testimony of Ralph F. Stallman.)

A. December 6, 1950.

Q. And was that catalogue that we referred to previously which is now marked as Plaintiff's Exhibit 7 for identification used all throughout that period? A. Yes.

The Court: That is from 1948 to 1950?

Q. (By Mr. White): From 1948 to December, 1950? [48]

A. No, I will qualify it; it took some time to prepare that catalogue, probably from 1949 to the——

The Court: To the end of 1950?

A. Yes. [49]

* * * * *

Q. (By Mr. White): Mr. Stallman, I hand you herewith Plaintiff's Exhibit 7, the patent of McGill, and I ask you to examine and ascertain whether or not the patent number which appears on the bearing is the same as your patent 2,334,227.

A. Yes, it is.

* * * * *

Q. Mr. Stallman, I hand you here three blueprints tied together and I ask you whether you can identify what they are.

A. These are prints of the McGill bearing that was made for the Casey Bearing Company.

Q. Is the Casey Bearing Company the same company who is the defendant in this case?

A. Yes.

Q. Were these sent to you by the McGill in the usual course of business? A. Yes.

(Testimony of Ralph F. Stallman.)

Q. What was the purpose of those prints?

A. Those prints were that I might study them, [50] correct them, help them along in the design.

Q. And then they were returned to the McGill Company?

A. No, they were from my personal file.

Q. And were bearings in accordance with those drawings, to your knowledge, ever delivered to Casey Bearing Company, the defendant?

A. Yes.

Q. And were such bearings sold by the Casey Bearing Company, the defendant in this case?

A. Yes.

* * * * *

Q. (By Mr. White): Yes. Will you read the dates from those particular blueprints?

A. April 18, 1950.

Q. Did you receive them about that time or about how long after? About when, do you remember?

A. I would say probably a week or so later.

Q. And they were in your possession since then?

A. Yes.

Q. I will also ask you to read the letter of instructions with respect to patent notice and marking on the particular blueprint, please. [51]

A. It says bearing mark McGill O. R. 22 X-2, patent No. 2334227, made in U. S. A.

Q. And that patent No. 2334227 is your patent number in suit here, is that correct? A. Yes.

(Testimony of Ralph F. Stallman.)

Q. Was that done with your permission and upon your instructions? A. Yes.

Q. That was under this particular agreement to which the letter of June 23rd referred, is that right? A. Yes. [52]

* * * * *

Q. (By Mr. White): Mr. Stallman, just very briefly, I would like you to look at these blueprints, Plaintiff's Exhibit 10, and advise the Court and jury for which companies those bearings were made up and designed by the McGill Company and in each case you state whether, according to your own knowledge, such a bearing was ever made, sold and delivered to those respective parties, if you know.

A. On this bearing No. ST77, those bearings [55] were manufactured and they went to the American Can Company, and they were in use in the American Can Company in San Francisco.

Drawing ST79, these bearings were made and are in use by the American Can Company.

ST121CR, these bearings were manufactured and are in use by the American Can Company.

ST78CR, these bearings were made and are in use by the American Can Company.

ST78CR, that is the working drawing of a part of the bearing mentioned before.

ST78CR is the working drawing of a part.

Roll No. 1193 is the working drawing of a part.

ST78CR is the working drawing of the retaining ring of the same bearings.

ST118 is a working drawing of the same bearings.

(Testimony of Ralph F. Stallman.)

ST118 is a grinding drawing of the same bearings.

Roll No. 1199 is a roller used in these same bearings.

Retaining ring No. ST118 is a ring used in these bearings.

CR12N is an outer race for one of the McGill catalogue bearings which is in use.

Q. For which company was that made? For any particular company?

A. The GR12 is a bearing that was sold by the Casey Company. I did not sell that bearing. GR12 is a working drawing. ST137 is a working drawing. [56] ST137 is a drawing of a bearing used by the Simplex Engineering Company in Zanesville, Ohio. That is in use. I saw that operate.

Q. Did you, Mr. Stallman, during that period between June 23rd, 1948 and the termination in December 1950, did you yourself do any selling of this Guiderol bearing for McGill Manufacturing Company?

A. Yes, I traveled around the East with McGill's sales manager and called on their trade wherever taken, and did what I could to promote the sale of this new bearing.

Q. Were there any sales through you under any trade name? Did you operate under any trade name as a company?

A. No, I was working with McGill under the McGill name.

Q. What is that Truerol Bearing Company?

(Testimony of Ralph F. Stallman.)

A. The Truerol Bearing Company is a company that I operated here for the purpose of making experimental bearings, carrying on experimentations.

Q. Did you under that name buy any bearings from the McGill Manufacturing Company?

A. Yes.

Q. For what purpose.

A. Some of the customers I had in San Francisco, the business that I turned over to the McGill Company.

Q. I will show you here purported commission statement from the McGill Manufacturing Company and ask you to identify that as well as the papers attached to it. [57]

A. This is a royalty statement that was sent out to me by the McGill Company listing all of the companies to which my bearing was sold and paying a commission on the bearing, a royalty on the bearing.

Q. What is the total volume of that?

A. The total volume of this statement is $12,645.

Q. What is the approximate date or period for which the statement was made?

A. That is November 30th, 1950.

Q. And that was sent to you by McGill Manufacturing Company in the usual course of business?

A. Yes.

Q. And it was in your possession since you received it all the time? It is in the same condition now as when you received it? A. Yes.

(Testimony of Ralph F. Stallman.)

Q. Those pencil notations are your notations?

A. Yes, I have some notations on here for my own use. The notation here says 86 per cent of these bearings are sold for stationary outer race application.

Q. But those notations were not on at the time you received them, is that right?

A. No, this is my handwriting.

Q. So except for your handwriting and the long-hand notations of the same, that statement is in the [58] same condition as you received it?

A. Yes.

Q. I will show you another commission statement, alleged, from McGill Manufacturing Company to Stallman, and I ask you to identify that.

A. This is another statement, February, 1950. This is $14,453.92. There is also a notation on this. It says 90 per cent of these bearings were used in stationary application.

Q. That notation was not on when you received that statement, was it?

A. No, that is my handwriting.

Q. Excepting for your handwriting, the rest of the matter is in the same condition as when you received it from the McGill Manufacturing Company, is that right? A. Yes.

Q. The papers attached there are what?

A. They are copies of sales records, copies of invoices.

Q. And that applies also to the attachments to the first group that I showed you?

(Testimony of Ralph F. Stallman.)

A. Yes. [59]

Q. There are several names there outside of Truerol Bearing Company. Would you identify what those names are and what they have to do with the transaction involved there?

A. These are substantially accounts that I turned over to the McGill Company when they started to make my bearing. They are the Hydraulic Equipment Company in Cleveland, Gallion Iron Works, Gallion, Ohio. There is a duplication through here. I will read them all.

Simplex Engineering Company, Energy Farm Equipment Company, Mealy Printing Press Company, Central Ohio Steel Products, Isaacson Iron Works, Casey Bearing Company—there are probably 30 names here.

The Court: That is sufficient.

Q. (By Mr. White): In each of those cases the names that appear there, Mr. Stallman, were the bearings actually delivered? A. Yes.

Q. And they paid for those bearings?

A. I presume they paid for them.

Q. To your knowledge were they used or were they returned for lack of utility?

A. No, they were all used so far as I know. [60]

* * * * *

Q. (By Mr. White): There is one more question I forgot to ask you with respect to Plaintiff's Exhibit 10. Please look at the drawings and state whether or not those drawings contain any instructions for patent marking.

(Testimony of Ralph F. Stallman.)

A. This one says, "Bearing mark McGill ST77 patent number 2334227." This is the same notation. This has the same notation.

* * * * *

Q. (By Mr. White): To your knowledge the bearings were actually so marked? A. Yes.

Q. After December 1950, when you got that letter of December 1950 which is Plaintiff's Exhibit 8, which is the alleged termination of your agreement as of January 1st, 1951, did you remain in the business of manufacturing and selling Guiderol bearings or some kind of bearings as your patent in suit here? [61] A. Yes.

Q. To what extent?

A. Well, I had one customer left in San Francisco that I continued to furnish bearings to and that is all. All the rest was turned over to the McGill Company.

Q. What is the name of that customer?

A. That is the California Press Manufacturing Company.

Q. What kind of roller bearings do you sell to them?

A. I sell them the center guided bearings under my patent.

Q. Do you mark this with a patent notice in any way? A. Yes.

Q. How do you mark them?

A. We put a slip of paper with the patent number in a package.

(Testimony of Ralph F. Stallman.)

Q. Does the California Press Manufacturing Company resell those bearings to anyone else?

A. No, they use them in machines, which machine they resell.

Q. Those are incorporated as a part of the machine and are they out of sight? A. Yes.

Q. All your other customers that you had at the time, whose names appear on this commission list, to your knowledge, at least those which are in California, do they still buy any bearings, Guiderol bearings? A. Yes, they still buy. [62]

Q. From whom did they buy them?

A. The George C. Casey Company.

Q. And that is the Casey Bearing Company?

A. The Casey Bearing Company.

Q. Is that the defendant in this case?

A. Yes.

Mr. White: That is all the direct examination.

* * * * *

Cross Examination

Q. (By Mr. Mueller): Mr. Stallman, referring to your testimony this morning, it is my understanding that you said the invention of your patent consisted of a method of cancelling skewing in a roller bearing. Is that what you testified, Mr. Stallman? A. Yes.

Q. Then is that what you obtained a patent upon, Mr. Stallman, a method of correcting skewing in a roller bearing? A. Yes. [63]

Q. Is that what your patent 2334227 in suit covers? A. Yes.

* * * * *

(Testimony of Ralph F. Stallman.)

Q. Mr. Stallman, is it a method of cancelling skewing in a roller bearing which you claim as your exclusive rights under your patent 2334227?

A. Yes.

Q. Will you please refer to a copy of your patent 2334227 and point out in your patent where [64] you describe your invention as you have just testified?

A. That is in the second paragraph. It is line 6, I suppose, I first saw, on the right hand side.

Q. On what page, Mr. Stallman, of your patent?

A. The first page.

Q. Will you please read directly from your patent, first identifying the line and the column and page, that which you have testified to as your invention?

A. "A further object of the invention is the provision of a needle type bearing in which the thrust action set up by misalignment of the needle is minimized and is self-correcting through the roll action of the bearing."

Q. Is that your invention, Mr. Stallman, that which you have read from column 2, the second paragraph on page 1 of your patent 2,334,227?

A. Yes, that is part of it.

Q. What other part of your invention——

A. I will have to read this and study it a little bit. From there on it is a description of the parts of the bearing. The last paragraph on the first column states, "It is the object of the present invention to overcome all the above mentioned dis-

(Testimony of Ralph F. Stallman.)

advantages and to provide a needle type bearing in which the needles are retained in place against either the inner or the outer race as may be required by different service, by simple and [65] inexpensive means and by means which will obviate the necessity of difficult grinding operations in the manufacture of the bearing races."

Q. That, Mr. Stallman, is from the paragraph beginning about line 52 or 53 at the bottom of the first column on page 1 and going to the top of paragraph on the second column of page 1, is that correct?

A. Yes, there is further description above that which I could read if you care to hear it.

Q. I am asking you if you would please tell us the invention you made in this patent. That is what we would like to have, if you please.

A. That is primarily the summation of the features.

Q. Do you find in either of those excerpts in your patent which you read the statement that your invention is a method for correcting skewing of a roller in a bearing?

A. The entire description will tell you that.

Q. That is the entire description that you read?

A. The description of the first column tells our reason for doing this, our method of accomplishing it, and what we have accomplished.

Q. Will you please refer to claim 3 of your patent in suit? Does that claim define a method for

(Testimony of Ralph F. Stallman.)

cancelling the skewed roller and roller bearing, cancelling out the skewing of the skewed roller?

A. That mentions in that claim that this [66] prevents endwise movement. If the endwise movement is restricted, the correction comes into place.

Q. Will you please read the language from claim 3 which says what you have just testified to, Mr. Stallman?

A. "A bearing comprising a rotatable inner race and a relatively stationary outer race, rollers interposed between said races and having aligned reduced portions intermediate their ends, a ring carried by the outer race and projecting into the reduced portions of the rollers to prevent their longitudinal movement and a second ring registering with and permanently contained within said reduced portions to hold the rollers in position in the outer race when the inner race is removed."

Q. Mr. Stallman, that claim 3 does not cover method, does it? You do not recite a method in claim 3?

A. Not unless you look over the drawings; it is quite obvious.

Q. Is it your claimed invention, Mr. Stallman, in your patent 2334227 actually the roller bearing with which you hope to prevent skewing? Is that what you are claiming in your patent 2334227?

A. No, our model was made long before we applied for a patent. We did not hope. We knew positively it would prevent skewing. [67]

* * * * *

(Testimony of Ralph F. Stallman.)

Q. (By Mr. Mueller): Mr. Stallman, isn't your claimed invention actually a needle bearing with which you will attempt to prevent skewing? Isn't that the purpose of your invention, to try to prevent skewing in a roller bearing?

A. No, the invention is that we do prevent skewing. [68]

* * * * *

The Court: What did you invent? A method, or did you invent a physical structure? I do not know whether you can answer it or not.

A. I do not know the terms there. I invented a bearing. I made a bearing. After it was made and proven, patent was applied for.

The Court: I think you are going to have to argue that question, counsel. It would not do any good to ask questions of the witness on the matter.

Q. (By Mr. Mueller): Mr. Stallman, can we agree that claims 3, 4, 5 and 9 each define a bearing?

Mr. White: If your Honor please, we stipulate on behalf of the plaintiff that claim 3, 4, 5 and 9 define a bearing structurally.

Mr. Mueller: Thank you. That will take care of it, Mr. White. [69]

* * * * *

Q. Referring to the amendment and page 3 of the amendment of October 30, 1941 under the "Remarks" you state:

"Of the references cited the patent to Heim appears obviously to be the only one which

(Testimony of Ralph F. Stallman.)

deals with a problem similar to that which is corrected by the invention of the present application."

Going further:

"Upon careful analysis of the Heim patent it is found that it does not in fact disclose the most important feature of applicant's invention, and it is believed that the claims now presented in this case clearly distinguish the present invention from the disclosures of Heim."

Do you agree with those statements today, Mr. Stallman? A. Yes.

Q. And going further, on page 3 of the amendment dated October 30, 1941, you state:

"The Heim patent is principally concerned with preventing longitudinal movement of [73] the rolls and is not in any way concerned with preventing misalignment of the rolls relative to their normal longitudinal axis which misalignment is referred to in the arts as skewing."

Do you agree with that today? A. Yes.

* * * * *

Q. Now going on to page 4 of the amendment dated October 30, 1941, you state, and I read:

"In order to prevent skewing the rings would have to be carried by the stationary race of the bearing."

Now, Mr. Stallman, do you mean the guide rail of your bearing to which you testified this morning

(Testimony of Ralph F. Stallman.)

when you talk about the ring would have to be stationary?

A. The guide rail must be stationary for satisfactory performance. The bearing can be misapplied, it can be abused, but it must be stationary for satisfactory performance. We have found that out many places.

Q. Referring to figure 1 of your patent 2334227, would you please point out the guide rail or ring so that there will be no question of that to which you are testifying.

A. This is the guide rail. This is the ring.

Q. Will you give them a number please, so that we know that which you are pointing to?

A. The guide rail carries the number 15; the ring carries the number 10.

Q. And that is the ring and the race that you are referring [75] to as having to be on the stationary or in a stationary position only?

A. That must be on the stationary position for satisfactory performance.

Q. Will a bearing made according to the teaching of Fig. 1 of your patent 2334227, operate if the ring 15 or guide rail on the race ring 10 is mounted in an application so that the race ring 10 and the guide rail 15 rotate?

A. It will operate for a short time but it will be full of friction.

Q. What do you mean by "full of friction," Mr. Stallman?

A. It will run sluggish, it will cause wear in

(Testimony of Ralph F. Stallman.)

the bearing, it will cause heat in operation, it will create many of the undesirable things in the anti-friction bearing field.

Q. In a bearing such as that in Fig. 1 of your patent 2334227 with the race ring 10 and the guide rail 15 on that race ring with them both stationary, is there heat developed in the bearing during operation?

A. Only usual running heat; not heat due to the operation of this particular bearing.

Q. What is the difference in the operation of a bearing, Mr. Stallman, between the usual heat and heat due to the operation of the bearing, if I understood you correctly?

A. In ordinary operation of a bearing, the lubricant itself will create some heat. It is the frictional heat from the [76] rubbing contacts that we must avoid.

Q. Do you avoid all frictional contacts such as I understood you to testify to with a bearing with the outer ring 10 and the guide rail 15 thereon in a stationary position?

A. Substantially all.

Q. And what friction would be developed if that ring 10 and the guide rail 15 were rotating rather than stationary? And we are referring to Fig. 1 of your patent 2334227.

A. These races—this race would tend——

Q. Will you please identify it by number?

A. This race 10 and the ring 15 would wobble engaging the shoulder 14 and 14 on both sides of

(Testimony of Ralph F. Stallman.)

the roller alternately carrying the roller with it, and inducing a skewing which we are trying to prevent.

Q. Now what bearing were you testifying to and what method of operation in this last question? Were you testifying to a ring 10 with a guide rail 15 stationary or rotating, in your last answer?

A. You asked for rotating, I believe.

Q. You were testifying to a condition if the ring 10 and the rail 15 were rotating; is that correct? A. Yes.

Q. Now if the ring 10 and the guide rail 15 on that ring in a bearing installation are both stationary, would you have friction developed in that bearing? [77]

A. Practically nothing; just the friction of the correction of the rolls.

Q. And what would that friction in the correction of the rollers mean relative to the friction that you testified to when that same ring 10 and the guide rail 15 thereon were rotating?

A. Well, if we can judge by the performance we have had of bearings in the field, I would say the friction has proven to date to be in excess of ten times.

Q. Ten times what, Mr. Stallman?

A. Comparing the performance of one of these bearings running in a misapplied form as against the properly applied form.

Q. Have you ever tested, Mr. Stallman, a bearing according to Fig. 1 of your patent 2334227 with

(Testimony of Ralph F. Stallman.)

the ring 10 stationary and the rail on that ring stationary, and have you shown the questions of friction and heat—the factors of heat and friction which you say are developed?

A. In that form that you just mentioned the bearing is used by the thousands all over the United States and you know that we are not having trouble with it.

Q. Will you please answer my question, Mr. Stallman?

A. That is the best I can answer it. There is no heat caused by friction.

Q. Have you ever tested, Mr. Stallman, a bearing such as [78] that in Fig. 1 of your patent 2334227 where the outer ring 10 and the rail 15 are stationary in the application?

A. Yes, I have tested lots of them myself.

Q. And did you determine the amount of heat generated in that bearing in any particular application?

A. When we determine heat, we determine relative heat of one application to the other; we do not attempt to establish the heat in temperature rise. We merely try to ascertain the heat of one construction against the other.

Q. Well, what is the heat factor by which you make your comparisons when the outer race ring 10 and rail 15 are stationary and when that same structure is rotating in an application? How do you make your heat determinations, and what are

(Testimony of Ralph F. Stallman.)

the readings from which you make the relative comparison?

A. When we are testing a bearing such as that we usually attach a thermometer to the case and measure the rise in temperature of the whole unit. The bearing is inside. We have no way of measuring the bearing, but if the unit does not heat up, we know that the bearing is not heating up.

Q. And have you tested, Mr. Stallman, a bearing such as that in Fig. 1 where the ring 10 and the rail 15 were rotating? A. Yes.

Q. And what were the heat readings that you found in that [79] test?

A. The bearing did not run long enough to satisfactorily build up heat readings. We could not measure the heat from that application. However, we have had that bearing in actual use in large diesel engines and it has had to be replaced because it would not perform satisfactorily.

Q. How many tests have you made, Mr. Stallman, of bearings such as that in Fig. 1 of your patent 2334227 where the ring 10 and the rail 15 were rotating in the application?

A. Oh, I have probably made 20 tests of my own.

Q. And how many tests have you made of a bearing such as that in Fig. 1 of your patent 2334227 where the ring 10 and the rail 15 were stationary?

A. Oh, I could say probably the same amount.

Q. And do I understand you are unable to give any statistics on heat generation as between the ten tests on one and the ten tests on the other?

(Testimony of Ralph F. Stallman.)

A. In the tests that I made the bearing was removed because it was erratic in operation; it had not built up temperature that we could measure, but if it was erratic in operation we know that it was not functioning properly and we know it was full of friction. [80]

* * * * *

A. No, I have no information on heat.

Q. (By Mr. Mueller): Do you have any information on friction generated in a bearing where the ring 10 with the rail 15 thereon is stationary, referring to your patent 2334227?

A. We have friction tests. There is one right there. We have numerous friction tests in the field, and the friction is so low we are not bothered with it.

Mr. White: May the record show that when the witness said, "The one right there," he was pointing to Plaintiff's Exhibit 5 for identification?

The Court: All right.

Q. (By Mr. Mueller): How do you establish, then, for purposes of comparison the friction conclusions that you have stated with a bearing installation with the ring 10 and rail 15 stationary? Upon what do you base your conclusions?

A. Friction is heat, and if there is no heat we are not particularly looking for friction. Now if the bearing wears out and we are forced to replace it, then we study the bearing for friction. We have had none of that to contend with.

(Testimony of Ralph F. Stallman.)

Q. Then do I understand you rely merely on a visual examination, Mr. Stallman?

A. No, we rely on the customers' field tests,—the performance of the bearing itself. [81]

Q. Have you yourself made any tests to determine the friction factor of ring 10 and guide rail 15 thereon stationary? A. No.

Q. Have you ever made any tests, Mr. Stallman, with a bearing such as that in Fig. 1 of your patent 2334227 where the ring 10 and the guide rail 15 thereon is in a rotating condition in the application? A. Yes.

Q. From that test which you made, how would you identify the friction factor from that test for that application?

A. By the erratic movement of the roll, by the smearing of the rail on removal for inspection, by the smearing and the wear on the roll parts.

Q. And did you visually examine the bearing that you had in such a rotating installation, Mr. Stallman? A. Oh, yes.

Q. How many tests did you make where you visually examined the bearing where the ring 10 and rail 15 of the bearing of Fig. 1 were rotating?

A. I made about ten tests and I examined all of them.

Q. And what did you do, Mr. Stallman, relative to the same bearing so that the rail 15 on the outer ring 10 was stationary? How did you compare those ten tests to which you have just testified? [82]

A. I would compare them only by inspecting

(Testimony of Ralph F. Stallman.)

their parts to see whether wear was occurring and see where to look for trouble, and, Mr. Mueller, might I remind you that not even——

The Court: No, no, don't get in any argument with the lawyer.

Ask the next question.

Q. (By Mr. Mueller): Over what period of time have you actually made tests from which you made visual examinations of the condition of the rail 15 on a ring 10 of the bearing Fig. 1 when that ring and rail were stationary?

A. Well, that goes back about 14 years.

Q. And the ten tests that you have made have been over a period of 14 years?

A. Yes, and we had our last test four years ago.

Q. Then do I understand you have not tested and examined a bearing such as that in Fig. 1 of your patent 2334227 with the ring 10 and rail 15 stationary for a period of four years?

A. Personally, no. I have reviewed many customers' applications.

Q. When did you last make a test as to that which would happen to a bearing such as Fig. 1 of your patent 2334227 when the ring 10 and the rail 15 were rotating in the application?

A. That is also about four years back.

Q. And the ten tests that you referred to, are they over a [83] period of some time, with the rotating ring and rotating guide rail, Mr. Stallman?

A. Yes.

Q. Have you tested any other bearings for fric-

(Testimony of Ralph F. Stallman.)

tion heat and any other operating characteristics that you observe with respect to the bearings of Fig. 2, 4 and 5 of your patent in suit?

* * * * *

A. Fig. 5, I have never made a bearing like that.

Q. (By Mr. Mueller): Have you ever made a bearing such as that in Fig. 4 of your patent in suit?

A. We have made these bearings with the outer member and the rail, but this Fig. 4 shows those two oil dams. We haven't made that.

Q. Have you ever made a bearing according to Fig. 2 of your patent 2334227? [84] A. Yes.

Q. Did you test that bearing for heat and friction factors? A. Yes. [85]

* * * * *

Mr. Mueller: If your Honor please, may I put large charts which are merely reproductions of the drawings of the patent without coloring on the easel, if I may?

The Court: Certainly.

* * * * *

Q. (By Mr. Mueller): Mr. Stallman, will you please refer to your patent and claim 3 of that patent. When your bearing according to claim 3 of your patent is moving in an installation and a skewed roller in the bearing is moved back into a straight line position, is that the effect of a bearing as defined in claim 3 of your patent?

A. Yes.

(Testimony of Ralph F. Stallman.)

Q. Is a straight line position in a moving installation of the bearing of Fig. 1, for instance, of your patent 2334227 a position such as the roller 10?

A. I do not see any roller 10.

Q. Such as the roller 12 shown in Fig. 1? What I would like to have you do is merely to identify, Mr. Stallman, what a non-skewed roller, a roller in a straight line position means [86] from the drawings of your patent 2334227.

A. You would have to refer to that view because we are looking at a roller in the direction of travel.

Mr. Mueller: Let the record show that when the witness points to that view, he points to Fig. 7.

Q. Then do we understand, Mr. Stallman, in a bearing according to your claim 3 of your patent a roller is in a straight line, alignment position, when it is in the position of the top roller of Fig. 7 of the drawings of your patent, and I refer to the top one of the three rollers in Fig. 7? Is that in alignment or straight line position? A. Yes.

Q. Has the skewing been cancelled in the roller in the position of the top roller in Fig. 7 of your patent? A. Yes.

Q. The second roller in Fig. 7, is that in a skewed position? A. Yes.

Q. And the third roller, is that in a straight line position? A. Yes.

Q. Would you say that the top and bottom rollers in Fig. 7 of your patent are shown as rollers where the skewing has been cancelled? A. Yes.

(Testimony of Ralph F. Stallman.)

Q. During the operation of the bearing, according to claim 3 of your patent, does a skewed roller such as the middle roller in Fig. 7 of the drawings go to a straight line, non-skewed position such as the top roller in Fig. 7 and the bottom roller in Fig. 7 A. Yes, when it contacts at A.

Q. And this correcting or cancelling of skewing occurs, as I understand it, in a bearing according to claim 3 while the installation continues to move, Mr. Stallman?

A. If the rollers are skewed, they drift endwise and correct themselves, that is true.

Q. That is, the rollers correct themselves to the top and bottom position in Fig. 7 from a skewed position of the roller in the middle while the bearing of your claim 3 continues to operate, is that correct? A. Yes.

Q. Does a roller bearing with a race ring and a guide rail on that race ring fitting into a recess in the neck of the roller where the skewed rollers continue to remain skewed during operation, does that bearing come within claim 3 of your patent?

A. If the bearing is built according to my patent that could not happen. I can't answer that question.

Mr. Mueller: Will you please read the question, Mr. Reporter? [88]

(Question read.)

A. No, it would not remain skewed.

Q. That is, to come within claim 3 of your

(Testimony of Ralph F. Stallman.)

patent a roller bearing must cancel skewing, is that correct? A. Yes.

Q. Referring to claim 4 of your patent—and will you just please refresh your recollection of that—take a bearing according to claim 4 of your patent: Does a bearing as defined in claim 4 cancel skewed rollers during the operation of the bearing so that the rollers come to a straight line position while the bearing continues to operate? A. Yes.

Q. And the straight line position, is that shown in the top roller and the bottom roller in Fig. 7 of your patent 2334227? A. Yes.

Q. Considering a roller bearing, Mr. Stallman, that is, a race ring with a guide rail on the race ring, and that guide rail fitting into a recessed position in the roller in the bearing, now, if the rollers in that bearing stay skewed during operation, does such a roller bearing come within claim 4 of your patent?

A. The roller could not stay skewed. I can't again—if they stayed skewed. They won't stay skewed. [89]

* * * * *

Q. (By Mr. Mueller): Mr. Stallman, a roller bearing which has a race ring and rollers therein with a guide rail on the race ring fitting into recesses in the rollers, if that bearing in operation does not cancel skewing in the rollers in the bearing, does that bearing come within your invention as you claim it in your patent?

A. Such a bearing I would have nothing to do

(Testimony of Ralph F. Stallman.)

with. My bearings never acted that way. I can't understand what you are trying to get at.

Q. Mr. Stallman, if a roller bearing of a construction such as Fig. 4 of your patent 2334227 does not cancel skewing when the rollers in that bearing skew, then does such a bearing come within what you claim to be your invention?

The Court: That is just another way of asking him if it does not work, it is no good.

Mr. Mueller: If your Honor please, we will show that it will work. We are trying again to find out if in fact it works successfully.

Mr. White: If your Honor please, if they are going to show it, why don't they show it without torturing this witness, a plain man, with hypothetical questions?

The Court: It is very difficult for me to follow these questions.

Mr. Mueller: If your Honor please, as you can see our [91] problem, on his direct testimony he said that a bearing according to his patent and his claimed invention cancelled skewing.

The Court: That is right.

Mr. Mueller: And I am trying to find out whether a bearing of the construction which I identified, which does not cancel skewing, if that comes within the invention that he described this morning in his testimony.

The Court: Of course, I think he would say no to that, wouldn't he?

(Testimony of Ralph F. Stallman.)

Mr. Mueller: I am asking him, your Honor, if he does or does not.

Mr. White: We object to that. It is totally immaterial what he thinks as to his patent. His patent still speaks for itself and is subject to argument as to what the scope of the claims are, what is in it and what is outside of it. Counsel merely argues with the witness at the present time as to the scope of the claims.

Mr. Mueller: If your Honor please, I believe it is just as simple, that as a litigant who has been sued, I think we are entitled to know from the patentee who is bringing the suit, particularly when he testified, I think we are entitled to know what his invention is.

The Court: Of course. There is no doubt about that.

Mr. Mueller: That is the purpose of this cross-examination, [92] your Honor, and entirely that, and I believe this is a proper line of questioning, which is not in any way torture, your Honor. I do not want to do that, I can assure you.

The Court: I think the line of examination is all right but it may well be the form in which you put the question is objectionable.

Mr. Mueller: I am trying to get it so there can be no confusion in the record, your Honor. I appreciate the difficulty, and I will certainly make every effort to keep it clear. I appreciate your comments.

Mr. White: In order to keep the record straight,

(Testimony of Ralph F. Stallman.)

your Honor, we want the record to show that it is entirely incompetent, irrelevant and immaterial what the opinion and feeling of a patentee is with respect to the invention of a particular patent. No matter what he says, the patent speaks for itself, and on that basis we object to it.

The Court: Except, Mr. White, it is perfectly competent cross-examination since you examined the plaintiff with respect to the purposes and objects of his invention, and what the so-called evil was that he claims his invention corrected. So it is within the realms of legitimate cross examination to inquire into that. It may be the particular form of the question is rather technical.

Mr. White: I did not examine this witness as to the scope of the claims, and it is entirely outside the scope of [93] the cross examination to examine him as a layman on a highly technical proposition as to the scope and meaning of the claims, what is within it and what is not. He was not examined on that, and that is outside the scope of the direct.

The Court: State the question again that you want.

Mr. Mueller: I will, sir, and will you please note that I did not use the claimed language. I tried to avoid making it complicated.

The Court: Will you state it again?

Mr. Mueller: I will, sir. Thank you.

Q. Mr. Stallman, referring to a bearing of the construction of Fig. 4, only for the purpose of suggesting a structure to you, will you please consider

(Testimony of Ralph F. Stallman.)

that bearing or consider a bearing with a race ring having a guide rail on the race ring, rollers within the bearing, with each roller having a recess into which the guide rail fits, on operation of the bearing which I have described the rollers skewed; now, if those rollers stayed skewed during the operation of the bearing—and please refer to the bearing which I described, and I am not now confining it to Fig. 4—on the bearing that I described, if the rollers stayed skewed, is that bearing within the invention which you are claiming?

A. If they stayed skewed for the thousandth part of a second, yes, but if they stayed skewed any longer I would have to think that one out a long time before I could answer [94] that.

The Court: Well, you don't really mean that, do you? If they stayed skewed, then it wouldn't be the thing that you were trying to cover.

Q. (By Mr. Mueller): I didn't put any time limitation, Mr. Stallman. I said that they stayed skewed—the roller stayed skewed during the operation of that bearing.

A. I can't get the sense to the question because the bearing would destroy itself; there would be no bearing to talk about.

Q. Will you please take the bearing which I gave to you—— A. I have it.

Q. I merely started on page 4, Mr. Stallman, to help you. I asked you if you would consider a bearing that had a ring with a guide rail on it, with a guide rail fitting into recessesin the rollers,

(Testimony of Ralph F. Stallman.)

and during the operation of those rollers in that bearing which I described to you those rollers skewed as a result of load factors in the installation. Now if those rollers stay skewed, and the skewing is not cancelled during operation, does that bearing which I have described to you, then the claimed invention in your pa' ent—— [95]

* * * * *

A. If that bearing that you speak of is in the description that you just gave me, it is within the patent. I don't know how it will perform.

Q. (By Mr. Mueller): I beg your pardon? If it is——

A. I say if the bearing is as you describe it, it is within this patent.

Q. Then do I understand, Mr. Stallman, that you claim as your invention a roller bearing which has a race ring, a guide rail on the inside of that race ring fitting into recesses in rollers in the raceway of the bearing—do I understand that you claim as your invention such a bearing whether the rollers stay skewed or the skewing in the rollers is cancelled.

A. If the bearing has the clearances shown in my drawing, it is in here. I can't answer the other question. I can't conceive of that thing happening, so I can't answer your [96] question.

Q. Will you please just think. You have had experience, have you not, Mr. Stallman, with many types of roller bearings?

(Testimony of Ralph F. Stallman.)

A. Yes, and what you mentioned cannot happen in this bearing. That is what I don't understand.

Q. Well, would you please follow my question, Mr. Stallman, and try to answer just my question. In brief, the end result that I gave you in my question is this: If the roller in that structure stays skewed during the operation of the bearing, as I understand it you say it is within your invention; is that correct? If the roller stays skewed and is not corrected, then in the roller bearing which I described it comes within your patent?

A. I can't say yes or no. This bearing was made and approved long before the patent was applied for. You are twisting something up and I can't understand it.

Q. Mr. Stallman, I will try to make it just as simple as I can. Do we understand one another that you testified that a bearing according to your invention while operating corrects skewing in the rollers with that bearing; is that correct?

A. It has in hundreds of thousands of cases, and you know that.

Q. Will you please answer my question, Mr. Stallman? A. Yes, it is true. [97].

If the skewed roller is brought back into alignment so the skewing is cancelled, then it comes within your invention; is that correct? A. Yes.

Q. Now if a bearing with exactly the same structure—an outer race ring, a rail on that race ring fitting into rollers with recesses in the rollers—if such a bearing is operating and the rollers stayed

(Testimony of Ralph F. Stallman.)

skewed so that the skewing is not cancelled, does that bearing come within your invention?

A. The structure does. I would like to see the job to see what you are getting at.

Q. Will you please take the question as I have given it to you and refer to your testimony on the operation that you get from a bearing according to your invention?

A. Mr. Mueller, I can't answer that question.

Q. Then you cannot tell us whether a roller bearing such as I have described where the rollers stay skewed—you cannot tell us as to whether or not that is within your invention, do I understand you correctly?

A. I would have to see the bearing and then I could tell you.

Q. Then would you like to correct, Mr. Stallman, your testimony, or change your testimony as to what constitutes the invention of your patent? You testified this morning as to the results you get from a bearing according to your invention. Now would you like to tell us what is the result you get so far as skewing is concerned in a bearing of your invention?

A. My results have been that for 20 years there was no bearing available on the American market until this one came along. This one corrected the problems. You know that as well as I do; we have no more trouble with this bearing. [99]

* * * * *

Q. (By Mr. Mueller): Mr. Stallman, will you

(Testimony of Ralph F. Stallman.)

please take any figure of your patent 2334227 which you wish and point out, identifying the structure of the figure—point out what you say is the invention of your patent 2334227.

A. Figure 1 is the popular version. Now the things you speak about could not happen in Figure 1 unless the machine itself was in such a dilapidated condition——

The Court: Well now, you are not answering the question; you are making a speech about it. He just asked you to describe your invention according to Figure 1.

A. This bearing if used according to the patent would not permit that skewing to continue. [100]

Q. (By Mr. Mueller): Then do I understand, Mr. Stallman, in the roller bearing of your invention skewing of rollers does not continue during the operation of your bearing?

A. Correction of skewing occurs. Skewing might continue, but——

The Court: Well, you would have to have skewing in order to correct it?

A. That's right.

The Court: Both of you fence too much about it.

The Witness: You might correct it to a minor degree or you might correct it completely, but it is still being corrected.

The Court: An invention wouldn't be worth a tinker's darn, would it, unless you had something there to be corrected; isn't that right?

A. That is right.

(Testimony of Ralph F. Stallman.)

Q. So the thing has to be there before it is subject to correction? A. That's right.

Q. So if it corrects skewing, you assume that there is going to be some skewing there but that this device—the structure of this device would accomplish some remedy of that; right? A. Yes.

The Court: That is what I understood him to say before. [101] Now you go ahead, counsel. I just interrupted because I thought you were fencing.

Mr. Mueller: I appreciate it, your Honor. I would like to be helped.

Q. Mr. Stallman, may we again take this question. Skewing, as you have testified with respect to the bearing of your patent. Now, if the rollers in your bearing skew, does the structure of your bearing straighten out those rollers during operation so that they no longer skew? A. Yes.

Q. Now if we have a roller bearing with rollers with recessed necks and a guide rail on the ring of that bearing, if in that bearing during operation the rollers skewed and instead of going back to alignment, instead of having the skewing cancelled, if that skewing continues during operation of that bearing, does that bearing come within the invention of your patent?

A. If I visualize a very minor skewing, I will answer yes.

Q. What would you consider a minor skewing?

A. One in which the friction was not sufficient to disturb the bearings. That condition exists.

(Testimony of Ralph F. Stallman.)

Q. If the skewing continues in the roll bearing during operation, does that have anything to do with the results which you claim for your invention in your patent?

A. It makes my bearing work harder but it is working toward a correction all of the time.

Q. If during operation of that bearing the rollers don't return to straight line position, the skewing isn't cancelled, is that a bearing according to your patent?

A. If the skewing is correct, it is a bearing according to my patent.

Q. If the skewing is cancelled out or corrected, then it comes within your patent?

A. That's right.

Q. But if the skewing is not corrected or cancelled, then do I understand that roller bearing does not come within your patent? Is that correct?

A. We could say that. I remind you I am just saying this because I am getting tired, getting weary; I can't stand it.

Q. Then I understand that when skewing is not corrected, is not cancelled, then that roller bearing when it is operating, it does not come within your patent; is that correct?

A. If my patent reduces the degree of skewing, it is still within my patent.

Q. Mr. Stallman if you will please refer to the file history of your patent again to the amendment dated February 17, [103] 1942——

* * * * *

(Testimony of Ralph F. Stallman.)

Mr. Mueller: I am referring to the file wrapper or file history. I beg your pardon, Mr. White; yes, paper No. 5. I wasn't looking. Yes that is correct.

Q. Will you please take page 2 of that amendment of February 17, 1942 and do you please read all of page 2 to yourself, Mr. Stallman, just to refresh your recollection? A. Yes.

Q. As I understand the statements on page 2 of that amendment, you are distinguishing your bearing from a bearing in a patent to Heim, 1885914; is that correct?

A. I presume that is the right number. [104]

* * * * *

Mr. Mueller: If your Honor please, I would like to note of record now that out of the prior patents set up in our answer we will rely for anticipation on the following:

The Zahn British patent, 17841 of 1906;

The Kentner United States patent, 585580 of June 29th, 1897;

The Heim U.S. patent, 1885914 of November 1st, 1932;

The Rydback U.S. Patent, 1979707 of November 6th, 1934; and the remainder of the patents will be relied upon to show the state of the art.

Q. (By Mr. Mueller): Mr. Stallman, I call your attention to Plaintiff's Exhibit 5 which is the test apparatus you employed to demonstrate to the jury the loading of a bearing to cause skewing and binding of the bearing rollers. Do you consider such an apparatus as your Plaintiff's Exhibit 5 satisfactory

(Testimony of Ralph F. Stallman.)

to demonstrate the way in which misalignment or skewing can be caused? A. Yes. [122]

Q. Mr. Stallman, do you consider the terms "skewing" and "misalignment of bearing rollers" to mean the same thing?

A. In the way we are talking about it here, yes.

Q. In the bearing of your patent, Mr. Stallman, must the raceway in which the roller guide rail is carried be stationary?

A. It operates in that manner much better than the other manner.

Q. Will you please answer the question yes or no? A. Yes.

Q. On direct examination, Mr. Stallman, you testified that in 1948 Mr. Crosby, one of the defendants, suggested that you see Mr. McGill in Valparaiso, is that correct? A. Yes.

Q. Is that the first time you discussed your bearing with Mr. McGill, and will you please answer yes or no? A. Yes.

Q. Did you ask McGill Manufacturing Company as early as 1945 to manufacture an order of your bearings for you?

A. I would have to refresh my memory on those dates.

Q. I hand you a letter dated April 25th, 1945, marked for identification Defendant's Exhibit D, and ask you whether that is your signature. That is a photostatic copy of a letter?

A. This is my signature.

Q. Did you write the letter which you have in

(Testimony of Ralph F. Stallman.)

your hand [123] marked for identification Defendant's Exhibit D? A. Yes.

Q. Did you in that letter discuss your bearing with the McGill Company?

A. This letter would speak for itself.

Q. Have you read the letter, Mr. Stallman?

A. It is so long ago I will have to refresh my memory on it.

Q. Will you please read it?

A. Did you want this read?

The Court: He just wants you to look at it because, I suppose, he wants to ask you a question.

The Witness (After perusing the document): Yes.

Q. (By Mr. Mueller): Is that letter a request to McGill to manufacture a bearing according to your patent 2,334,227, and the letter I refer to is that of April 25th, 1945 from you to McGill Manufacturing Company? A. Yes.

* * * * *

Q. (By Mr. Mueller): I hand you three prints collectively marked for identification Defendant's Exhibit E. Will you please tell me what they are?

A. These are prints of a bearing that was for the California Press Manufacturing Company, and I sent this to the McGill Company and others asking if they would manufacture these bearings before I got into the manufacture out here, and they did not manufacture them.

Q. About what date, Mr. Stallman, did you send these three prints which you have identified marked

(Testimony of Ralph F. Stallman.)

for identification as Defendant's Exhibit E? When did you send those to McGill, approximately?

A. These prints are marked May 22, 1945. I imagine it was very close to that time.

Q. These prints which you sent to McGill, possibly in April or probably in April 1945, marked for identification Defendant's Exhibit E, do these show parts of your bearing and a bearing assembly according to the bearing of your patent 2,334,227?

A. Yes.

* * * * *

Q. (By Mr. Mueller): Mr. Stallman, in 1945 did you discuss with the McGill Manufacturing Company a bearing according to your patent 2,334,227? [125]

A. I can't recall ever having been at the McGill plant prior to my meeting with Mr. Crosby.

Q. I hand you two letters, one dated May 16th, 1945 addressed to the McGill Manufacturing Company, and ostensibly from you, R. F. Stallman, and a carbon copy of a letter dated May 25th, 1945, ostensibly from Charles S. McGill to R. F. Stallman of the two letters marked for identification Defendant's Exhibit F, and will you just read them to yourself, please, sir?

A. Yes, these look all right.

Q. Is that your signature on the letter of May 16th, 1945? A. Yes.

* * * * *

Q. (By Mr. Mueller): Mr. Stallman, does your letter of May 16th, 1945 in the two-letter collection

(Testimony of Ralph F. Stallman.)

of Defendant's Exhibit F refer to a visit to the McGill Company prior to May 16th, 1945?

A. That correspondence indicates a visit, but that must have been after the visit I had with Mr. Crosby. I can't [126] recall having been back to contact McGill prior to that Crosby contact. I will have to refresh my memory on the correspondence. It goes back further than I thought.

Q. This letter, Mr. Stallman, of May 16th, 1945, which you are writing to Mr. McGill, states:

> "My sample bearings were left with you for study, and I now have occasion to use the small pressed seal sample."

Does that refresh your memory in any way as to a visit prior to 1948 at the McGill Company?

A. It is a visit prior to 1948, yes.

Q. When was the visit to which you have just referred prior to 1948 in your last answer?

A. From that correspondence it would be 1945.

Q. Do the sample bearings to which you refer in your letter of May 16th, 1945 refer to bearings made in accordance with your patent 2,334,227?

A. Yes.

Q. Did McGill Manufacturing Company in 1945 in fact bill some bearings for you in accordance with your patent 2,334,227?

A. No, not that I can recall.

Q. I hand you a letter dated September 18th, 1945 marked for identification Defendant's Exhibit G. Will you please tell me what it is? [127]

(Testimony of Ralph F. Stallman.)

A. These are the same bearings that were covered in the prints that we just discussed.

Q. Will you please tell me what the letter is or the copy of the letter is that I just handed to you, Mr Stallman, marked for identification Defendant's Exhibit G?

A. Well, they state here that they have shipped 112 bearings to the California Press Company which they manufactured apparently from this correspondence at a loss, and that they are developing a new bearing of their own.

Q. Do you know what that shipment referred to in that letter may be so far as construction of a bearing?

A. It appears to be a shipment of 112 bearings such as the drawings we just discussed, which is a double-row bearing.

Q. Are those bearings which were discussed in the letter to you of September 18th, 1945 bearings coming within your patent 2,334,227? A. Yes.

Q. Were those bearings 112SK7691 bearings which you ordered from McGill Manufacturing Company in 1945? A. Yes. [128]

* * * * *

Q. (By Mr. Mueller): After the purchase of bearings from the McGill Company in 1945 in accordance with your patent 2,334,227 did you have any other contact with McGill prior to the visit in 1948 to which you referred on your direct examination? A. Not that I can recall.

Q. Did you have any correspondence with the

(Testimony of Ralph F. Stallman.)

McGill Company prior to your visit in 1948 concerning the bearing of your patent 2,334,227?

A. Yes, that that you have cited is correspondence.

Q. Did you have any correspondence with the McGill Company between 1945, the correspondence which you have testified to, and the summer of 1948, concerning your bearings?

A. Yes, I had correspondence, that same material that you are pointing out there now. Just how much I can't recall. It is a long time ago.

Q. By pointing out, Mr. Stallman, you mean the correspondence which you have already identified in 1945? I am just trying to clarify your answer.

A. I have corresponded with a number of other bearing companies, but it is not clear in my mind after all this time just what correspondence there was.

Q. That is, you do not recall having any correspondence with McGill prior to 1945 and 1948, then, is that correct? [129]

A. Well, If I corresponded in 1945 and again in 1948, there may have been some in between. [130]

* * * * *

Q. (By Mr. Mueller): You testified on direct examination that your trip in 1948 to Valparaiso on the talks with the McGill officials terminated in a contract; is that correct? [131]

A. Yes, I secured a contract from McGill.

Q. And that document which you refer to as a

(Testimony of Ralph F. Stallman.)

contract is Plaintiff's Exhibit 6 (showing to witness).

The Court: He has already covered that, counsel. He has already said that.

Q. (By Mr. Mueller): Was this arrangement represented in the letter of June 20th, 1948 with McGill a tentative or a permanent arrangement?

The Court: Counsel, doesn't the document show what it is?

Mr. Mueller: I beg your pardon?

The Court: Is it ambiguous? Doesn't the document itself show what it is?

* * * * *

Q. (By Mr. Mueller): Was the arrangement which you had with McGill tentative or permanent, referring to the letter of June 20, 1948, Mr. Stallman?

A. To my understanding, it was permanent.

Q. Did you, subsequent to June 20, 1948 have correspondence [132] back and forth with McGill concerning the letter of that date and concerning the arrangement in that letter?

A. You are going back so far that I would have to review that. I can't state from memory. [133]

* * * * *

Q. (By Mr. Mueller): In conferences in the spring of 1950 with you in Valparaiso, Indiana, Mr. Stallman, did the McGill Company question the validity of your patent?

A. Not that I can recall.

Q. Did you have conferences with the McGill

(Testimony of Ralph F. Stallman.)

Company concerning the arrangements in the letter of June 20, 1948 in the year 1950?

A. I had several conferences after that agreement was made.

Q. In July 1950 did you get a copy from the McGill Company of an opinion from its counsel dated June 17, 1950 on the matter of your patent 2,334,227?

A. Yes, I recall an opinion coming through on it. [134]

* * * * *

Q. (By Mr. Mueller): Did the McGill Company transmit to you the opinion of their counsel with a letter dated June 29, 1950?

A. I received an opinion; I am hazy on the date.

Q. I am merely handing you this letter to refresh your recollection and I will include that. That is correspondence [135] between you and McGill, Mr. Stallman?

A. I received that letter. [136]

* * * * *

Mr. Mueller: That is all the cross examination.

Mr. White: There is no redirect examination.

The Court: You may step down.

Mr. White: The next witness, your Honor, is Mr. Crosby, the defendant.

T. W. CROSBY

one of the defendants, called as a witness by the plaintiff; sworn.

(Testimony of T. W. Crosby.)

Q. (By the Clerk): Will you please state your name to the Court and to the jury, sir?

A. T. W. Crosby.

Direct Examination

Q. (By Mr. White): Mr. Crosby, will you state your occupation?

A. President of the Bearing Specialty Company.

Q. You heard Mr. Stallman testify yesterday and today? A. Yes, sir.

Q. And you know Mr. Stallman personally?

A. Yes, sir.

Q. When he stated that you were related by marriage to one [138] of the Mr. McGills of the McGill Company, that is the truth, is it?

A. Yes, sir.

Q. And it is also the truth that you are the president of the Casey Bearing Company, the defendant in this case? A. Yes, sir.

Q. Is it also the truth that he had a conference with you in an automobile in front of your place about this patent and when he had it?

A. Yes, sir.

Q. And is it also true that you suggested to him to go to McGill and to show it to them?

A. Yes, sir.

Q. And subsequently you don't know what went on between him and the McGills back East?

A. I had no connection with it.

Q. No connection with that, but as an ultimate result subsequently to your own knowledge McGill

(Testimony of T. W. Crosby.)

started to manufacture Guiderol bearings, is that right? A. Yes, sir.

Q. And those Guiderol bearings ultimately were sold by your company and by you on the Pacific Coast? A. Yes, sir.

Q. And those Guiderol bearings are the same bearings that are shown here in Plaintiff's Exhibit 5-A. [139]

Mr. Mueller: If your Honor please, there have been no sets established as to this testimony that I heard.

Mr. White: He heard the testimony of Mr. Stallman, your Honor.

Mr. Mueller: I mean to establish the period. What period are we talking about in Mr. White's examination of Mr. Crosby?

Mr. White: We are talking here, if you understand, about the period between your first meeting with Mr. Stallman—was that the first meeting that you had?

A. In regard to the Guiderol bearing.

Q. Did you know him before that date?

A. Yes, sir.

Q. And in what connection?

A. As a business connection in the bearing business.

Q. In the bearing business?

A. Relative to the bearing business, yes, sir.

Q. And prior to that connection, did you ever see or sell any bearing which was made similar to this Guiderol bearing? A. No, sir.

(Testimony of T. W. Crosby.)

Q. And do you remember approximately the year in which that meeting took place between you and Mr. Stallman?

A. I would say approximately 1947 or '48; along in there, approximately.

Q. Did you know whether Mr. Stallman had any previous [140] correspondence or connection with McGill? A. No, sir.

Q. You didn't know that. We are talking now about the period subsequent to your meeting with Mr. Stallman on all these matters that I am asking you. I show you here Defendant's Exhibit 5-A. Can you identify that as a bearing that was sold by you —a Guiderol bearing sold by you?

A. Yes, sir.

Q. You have several branches on the Pacific Coast of the Casey Bearing Company, don't you, Mr. Crosby? A. Yes, sir.

Q. There is one in Los Angeles?

A. Yes, sir.

Q. There is one in Glendale? North Glendale?

A. Maywood.

Q. And there is one over in Oakland. And as I understood at the time of your deposition, all these branches report in to the main office of Casey Bearing Company as to their sales. A. Yes, sir.

Mr. White: I believe the questioning could be avoided and abbreviated. Counsel furnished me here with a number of catalogues which are used in connection with the sale of Guiderol bearings by Casey Bearing Company, and if counsel stipulates to their

(Testimony of T. W. Crosby.)

admission I could offer each of them in [141] evidence at this time. [142]

* * * * *

Q. Isn't it true, Mr. Crosby, that originally the predecessor company of Casey Bearing Company was owned by McGill Manufacturing Company, the manufacturers of these bearings?

A. Well, not originally.

Q. Not originally? A. No.

Q. That's right; prior to your ownership—immediately prior to your ownership McGill owned it; is that right? A. That's right.

Q. Which means that the stocks of the company were sold to you and to your partners by the same McGill Company who manufactures the Guiderol bearings? A. Yes.

Mr. White: If your Honor please, counsel graciously stipulated to the fact that actual notice of infringement was sent out by a letter under date as it appears in the complaint, the date of the letter. [144]

* * * * *

Cross Examination

Mr. Mueller: I just have one question, Mr. Crosby. Did you do anything beyond the ordinary duties of an officer of a corporation so far as the sale of the Guiderol bearings are concerned?

A. Would you repeat that, please?

Q. Did you do anything other than the ordinary duties of an officer of a corporation so far as the

(Testimony of T. W. Crosby.)

sale of Guiderol bearings are concerned by Casey Bearing Company? A. No, sir.

Q. (By Mr. White): Mr. Crosby, you solicit customers for yourself, don't you, for these bearings personally? A. Yes, sir.

Q. And you go out as a salesman and sell the bearings? [145] A. Yes, sir.

Q. And then you just act as a salesman for Guiderol bearings, is that right? A. Yes, sir.

Q. (By Mr. Mueller): This solicitation, Mr. Crosby, is merely as an officer and employee of the Casey Bearing Company; is that correct?

A. Yes, sir.

The Court: What he is trying to bring out is that you didn't do any business in your own right personally.

A. Oh, no.

Q. This was company business that you were doing? A. Absolutely.

The Court: Is that what you want to bring out?

Mr. Mueller: That is it, sir. Thank you. [146]

* * * * *

Mr. White: If your Honor please, may we recall Mr. Crosby for a few more questions?

Q. Mr. Crosby, when your attorneys rendered an accounting, you gave them Guiderol bearings which were sold out of stock by you or by your company either here or in Los Angeles; you furnished that to them, didn't you? A. Yes.

Q. That accounting only covers the Guiderol bearings which were sold directly out of your stock,

(Testimony of T. W. Crosby.)

which you are keeping in stock in the various companies, is that correct? A. Yes.

Q. In addition to that, you are doing business in the sale of Guiderol bearings which you do not sell out of stock, is that right? A. Yes, sir.

Q. How do you do that business?

A. We submit the order.

Q. You take the order first, don't you?

A. Sometimes we do; sometimes we do not, but it is submitted directly to McGill Manufacturing Company.

Q. Who submits it?

A. If it goes through our hands, if the purchase order is sent to us in the name of McGill Manufacturing Company, we submit it to McGill and they can either accept or refuse the order, and they do the billing and ship direct, and we [147] never handle the merchandise at all.

Q. But you get a commission on it, don't you?

A. Yes.

Q. You solicit those orders, don't you?

A. Yes.

Q. So you solicit the orders and then it is sent back to the company for approval or rejection, and then they accept, they fill the order and give you a commission?

A. Yes, and they do the billing.

Q. Isn't it true that the quantity of those Guiderol bearing sales which you solicited in the manner you have last described is much greater than the sale of the Guiderols out of stock?

(Testimony of T. W. Crosby.)

A. As a general rule. [148]

* * * * *

A. Yes.

Q. (By Mr. White): For instance, you have one customer in Los Angeles, McCullough?

A. McCullough Motor Comany.

Q. Isn't it true the sales of that exceed 7,000 bearings a month?

A. I couldn't answer that. I don't know.

Q. Didn't you testify in your deposition all the invoices from the Los Angeles office came through your hands in San Francisco? A. Yes, sir.

Q. And you do not recall as to the volume at all?

A. I couldn't recall the quantity, Mr. White; no, sir.

Q. Would you say it runs into the thousands a month? A. How many?

Q. It runs into the thousands of bearings a month.

A. I can't answer that because I don't know. I would say approximately yes, it probably would.

* * * * *

Mr. White: The plaintiff rests.

VIRGIL A. HOFFMAN

called as a witness on behalf of the defendant, sworn.

Q. (By the Clerk): Will you please state your name to the Court and to the jury, sir?

A. Virgil A. Hoffman.

(Testimony of Virgil A. Hoffman.)

Direct Examination

Q. (By Mr. Mueller): Will you state your age and residence, Mr. Hoffman?

A. 39 years old. I live 2239 South Ayers Avenue, Los Angeles, California.

Q. Could we fix that so it is a little more comfortable? May we remove some of these exhibits?

The Court: Surely.

Q. (By Mr. Mueller): What is your occupation, Mr. Hoffman?

A. I am the vice-president and general manager of the Southern Division of the Bearing Specialty Company.

Q. Is Bearing Specialty Company the successor of Specialty Bearing Company, the defendant in this case? A. Yes.

Q. Would you classify your company as a [152] distributor of different products and a representative for manufacturers of products?

A. Yes, sir.

Q. In other words, you would be a distributor and manufacturers' representative; would that be the classification of the company by whom you are employed? A. That is right.

Q. How many manufacturers do you represent in one of those two capacities in your company, Mr. Hoffman? A. Fifteen, I would say.

Q. Can you identify the different types of products sold by your company in one capacity or another?

A. Yes, we handle ball bearings, straight roller

(Testimony of Virgil A. Hoffman.)

bearings, the type to as needle bearings, tapered roller bearings, roller chain and sprockets, oil steels, oil rings, industrial retaining rings, and that pretty well covers it.

Q. Is McGill Manufacturing Company of Valparaiso, Indiana, just one of the fifteen accounts which your company handles? A. Yes, sir.

Q. Is the bearing identified by the trademark Guiderol just one of different types of bearings which you sell? A. Yes, sir.

Q. How long have you been associated with Bearing Specialty Company or its predecessor?

A. 1947 I started there. [153]

Q. In the period from 1947 to date, what in general have been your duties, Mr. Hoffman?

A. I was a salesman from 1947 until August of 1950, at which time I was made the branch manager in Los Angeles, but I continued to act as a salesman as well as manager, and in just this past year I was made general manager and vice-president, and continued to sell.

Q. Had you any experience in the bearing field prior to 1947?

A. Yes, sir, I worked for Pacific Bearings in Los Angeles from, I think, 1942 until 1947.

Q. What in general were your duties at Pacific Bearing Company in the period from 1942 to 1947?

A. Well, to take and solicit orders. I worked on the order desk, telephone order desk, and then out selling for them.

Q. Can we say, then, Mr. Hoffman, that con-

(Testimony of Virgil A. Hoffman.)

tinuously since 1942 you have been selling anti-friction bearings of one type or another?

A. That is right, sir.

Q. Has your work in selling bearings been entirely in the Los Angeles area since 1942?

A. Yes, sir.

Q. Is the bearing which I show you, marked for identification Defendant's Exhibit I, one size and type of Guiderol bearing in the form in which you sell it? [154] A. Yes, sir.

Mr. Mueller: I might say, Your Honor, so there will be no misunderstanding, we have an inner ring that I want the witness to identify, and it won't fit into the larger size bearings, but I will tie the two together.

Q. Does the bearing marked for identification Defendant's Exhibit I correspond except for size to the bearings Plaintiff's Exhibit 5-A before you?

A. Yes, sir.

Q. Is the bearing marked for identification defendant's Exhibit I representative of all Guiderol bearings which you sell in an assembly of an outer race ring and rollers? A. Yes, sir.

* * * * *

Q. (By Mr. Mueller): When you sell a Guiderol bearing such as Defendant's Exhibit I, is there any movement in the parts of that bearing at the time you sell it? A. No, sir. [155]

Q. The movement in the parts of a Guiderol bearing such as that, Defendant's Exhibit I, occurs after installation of the bearing, is that correct?

(Testimony of Virgil A. Hoffman.)

A. Yes, that is right.

Q. Is it a fact that any skewing of the rollers due to the operation of the bearing such as Defendant's Exhibit I occurs after installation of the bearing? A. Yes.

Q. Have you yourself actually made the sales of Guiderol bearings as represented in the model Defendant's Exhibit I? A. Yes, sir.

Q. Did you ever sell and deliver a Guiderol bearing to a customer of your company with the inner ring assembled in the outer race ring?

A. Very seldom we ever do.

Q. Is this that I hand you marked Defendant's Exhibit J an inner ring such as would fit into the outer race ring assembly of a Guiderol bearing, such as Defendant's Exhibit I?

A. That is right, sir.

Q. Will you, Mr. Hoffman, for the Court and the jury, merely show that? The inner race ring will slip in and out of the outer bearing race ring, and we are referring to the items Defendant's Exhibit J and the inner ring marked for identification Defendant's Exhibit I. A. Yes, sir. [156]

The Court: I did not understand this. He only sells the outer ring? He does not sell the inner ring?

Mr. Mueller: No, he sells the inner ring, but the inner ring may be sold separately from the outer ring.

The Court: All right.

Mr. Mueller: And this happens to fit. They were

(Testimony of Virgil A. Hoffman.)

chosen as representative so they would show the inner and outer race ring assemblies.

* * * * *

Q. (By Mr. Mueller): Over the past four years can you estimate the number of Guiderol bearings your office has sold with inner rings and outer ring assemblies such as those, Defendant's Exhibits I and J?

A. When they are assembled together?

Q. Yes, where they are assembled together.

A. Well, I would say we sold about 50 assembled units.

Q. That is where the inner race ring such as Defendant's Exhibit I was actually included at the time of sale within the outer race ring assembly, such as Defendant's Exhibit J? [157] I am sorry.

The Court: J is the inner ring.

Q. (By Mr. Mueller): At least it is the inner ring and the outer race ring assemblies, J and I, which you have before you, Mr. Hoffman.

A. I would say we only sold about 50 sets assembled together in the past four or five years.

The Court: The great majority of them are sold separately?

A. That is right.

Q. (By Mr. Mueller): Do you ever sell to bearing customers an inner ring such as Defendant's Exhibit J separately from the outer ring assembly?

A. Yes, we do.

Q. Can you estimate approximately the number of inner rings which you sell relative to the number

(Testimony of Virgil A. Hoffman.)

of outer ring assemblies such as the model, Defendant's Exhibit I?

A. Well, assuming that our sales of the bearing only are 100 per cent, I would say we sell about 20 per cent of that portion that we sell inner races for.

The Court: You sell 20 per cent of the inner ring separately, is that what you are saying?

A. No, I say if we sell, say, 100 bearings, we would only sell 20 inner races, whether they were at the same time or subsequent. [158]

Q. 80 per cent of the business is the outer ring?

A. The outer ring and rollers, yes, sir, your Honor.

Q. (By Mr. Mueller): Can an inner ring such as the ring Defendant's Exhibit J be used with an outer ring bearing assembly other than Guiderol bearings?

A. Yes, we use these in our standard multi-roller bearings.

Q. And so the jury will thoroughly understand and the Court—I am sure you do—this inner ring, Defendant's Exhibit J, will go into other bearings than the outer assembly, Defendant's Exhibit I, is that correct?

A. Yes, we have been selling those for many years before that.

Q. Can an inner ring such as Defendant's Exhibit J be used with bearings of manufacturers other than the bearings of McGill Manufacturing Company? A. Yes, sir.

(Testimony of Virgil A. Hoffman.)

Q. It is just a matter of size, is it, Mr. Hoffman?

A. Well, everybody makes a bearing with these envelope dimensions, and this race will fit into any other dimensional interchangeable bearing of that type.

Q. By envelope you mean the outer race ring assembly?

A. Yes. In other words, what you would consider your outside diameter, the width of the bearing, your total width of the bearing, then what would normally be the inside diameter of the rollers or the shaft size or the o.d. of the [159] inner race.

Q. The o.d. means the outer diameter, Mr. Hoffman? A. That is right.

Q. In your answer you were referring to a bearing assembly such as Plaintiff's Exhibit 5-A and Defendant's Exhibit I.

A. That is right, sir.

Q. Do bearing manufacturers generally have standard sizes of bearings, Mr. Hoffman? Is that the reason for this interchangeability of the inner race ring? A. Yes, sir, that is right.

Q. Normally with respect to a Guiderol bearing what serves as the inner raceway for that bearing when it is installed?

A. The shaft would serve as the inner race if we did not supply them with an inner race of our manufacturer.

The Court: You mean in some cases the shaft is

(Testimony of Virgil A. Hoffman.)

the inner ring and in other cases there is an inner ring on the shaft?

A. That is right.

Q. (By Mr. Mueller): Mr. Hoffman, so we all understand in a representative way a shaft, I am pointing to Fig. 1 of the Heim patent 1885914, and using that figure merely as an illustration, is the element 17 a shaft?

A. Yes, sir, No. 17 is a shaft and it would serve as an inner race in this application.

Q. You are talking about putting an outer race ring [160] assembly such as Defendant's Exhibit J on a shaft—and again I am pointing merely for illustration—to a shaft such as 17 in Fig. 1 of Heim?

A. That is right.

Q. Mr. Hoffman, is an inner ring necessary when the outer bearing assembly is mounted directly on a shaft? A. No, sir.

Q. If the customer in ordering a Guiderol bearing from you or your company does not specify how and where he is going to install the bearing, do you inquire, Mr. Hoffman?

A. Not normally, no, sir.

Q. Has anyone in your company told you that when you sell a Guiderol bearing you must inquire as to how that bearing is to be installed by the customer? A. No, sir.

Q. Might anyone in the employ of your company, such as clerks and the like, sell Guiderol bearings to customers requesting the same?

A. Yes.

(Testimony of Virgil A. Hoffman.)

Q. Have you ever been told by the McGill Manufacturing Company, as the manufacturer of the Guiderol bearing, that you should inquire of the customer as to the place and type of installation which he is going to make before you sell a Guiderol bearing? A. No, sir. [161]

Q. Have you ever been told by anyone that the Guiderol bearing such as Defendant's Exhibit I will work only if the outer race ring carrying a guide rail is mounted in a stationary position?

A. No, sir.

Q. Over the years that you have been selling Guiderol bearings do you recall of any customer who asked you whether the race ring having the Guiderol thereon should be mounted in the application so that the race ring is stationary or rotating?

A. No, sir.

Q. In your sales talk to customers and prospective customers in the sale of Guiderol bearings have you ever mentioned that the guide rail should be on the stationary race of the bearing installation?

A. No, sir.

The Court: What you are saying practically is you are not interested in what the customer does with it. All you are doing is selling these things, is that right? A. That is right, your Honor.

Q. It is like a man selling a piano. He doesn't care whether you place the piano in the kitchen or where you put it. All he is interested in is selling the piano. Is that a correct statement colloquially?

A. That is right, your Honor. [162]

(Testimony of Virgil A. Hoffman.)

Q. You just sell those things. That is your business.

A. We like to know that it works well so we get repeat business. I will say that. Otherwise you are absolutely right on that. [163]

* * * * *

Q. (By Mr. Mueller): Mr. Hoffman, do you know of your own knowledge whether a Guiderol bearing such as Defendant's Exhibit I when the outer race ring carrying the guide rail is mounted in a rotating position in a machine or other application? A. Yes, I do.

Q. Do you know of any installation of Guiderol bearings where the outer race ring having the guide rail on the inner surface of the outer ring is mounted as the rotating member of the bearing?

A. Yes, we sell an installation like that to the Hillman-Kelley Company in Los Angeles.

Q. In the Hillman-Kelley installation to which you refer, the guide rail then is rotating, is that correct, in an operating bearing?

A. That's right, sir.

Q. I hand you a print marked for identification Defendant's Exhibit K. Will you state what it was and I will hand it to you, Mr. Hoffman.

(The blueprint referred to above was thereupon [164] marked Defendant's Exhibit K for identification.)

Q. (By Mr. Mueller): Will you please state what the print is, Mr. Hoffman?

(Testimony of Virgil A. Hoffman.)

A. Oh, I beg your pardon. It is a cluster gear assembly.

Q. Where did you obtain the print which you have in your hand?

A. From the Hillman-Kelley Company.

Q. Have you actually observed a Guiderol bearing installation at the Hillman-Kelley Company in the cluster gear assembly of that print?

A. Yes, sir.

Q. Did you obtain the print marked Defendant's Exhibit K in the ordinary course of your business with Hillman-Kelley Company?

A. Yes, sir.

Q. In the Hillman-Kelley Company installation represented by that print does the Guiderol bearing have an outer race ring assembly?

A. Yes, sir.

Q. Does the race ring in that Guiderol bearing rotate in the installation on the print?

A. Yes, sir.

Q. Has the Hillman-Kelley Company ever reported to you or to your company any failure of a Guiderol bearing or the guide rail that was on the rotating race ring? [165]

A. No, they haven't.

Q. Approximately how many Guiderol bearings of the type illustrated in the print marked for identification Defendant's Exhibit K has the Hillman-Kelley Company purchased?

A. Well, I would say about several thousand.

Q. Over what period of time did the Hillman-

(Testimony of Virgil A. Hoffman.)

Kelley Company purchase the Guiderol bearings you have described? A. Since about 1953.

* * * * *

Q. (By Mr. Mueller): Does the Hillman-Kelley purchase any other type of Guiderol bearing than the one shown on the print which you have before you, Mr. Hoffman?

A. Yes, they purchase another size bearing.

Q. Have you anything to show an installation of the Guiderol bearing to which you have just testified? A. Yes, I had a drawing. [166]

* * * * *

Q. (By Mr. Mueller): Will you please look at that and tell us what the print is?

A. It is a print of an idler gear assembly, and this was also used in their casings tongs, also an outer race rotation and the guide rail is on the outer ring of the bearing.

Q. Does the gear assembly shown on the print which you have in your hand have one race or two race rings? A. Two race rings.

Q. And would you characterize those two race rings as an inner race ring and an outer race ring, Mr. Hoffman? A. That's right, sir.

Q. Is the guide rail in the Guiderol bearing of the installation in the prints which you have moving or stationary?

A. The Guiderol is on the outer race and that rotates as the gear turns. The guide rail is on the rotating member.

Q. Then in this Guiderol bearing of the print

(Testimony of Virgil A. Hoffman.)

Defendant's Exhibit L we have an inner and an outer race ring? A. Yes, sir.

Q. But in this installation the guide rail on the outer race ring rotates; is that correct?

A. That is right. [167]

Q. In that respect, Mr. Hoffman, does the guide rail rotate in this installation the same as it does in the installation of the print which you previously testified to? A. Yes, it does.

Q. Did you obtain the print marked Defendant's Exhibit L for identification in the ordinary course of your business? A. Yes, sir.

* * * * *

Q. (By Mr. Mueller): In your experience from 1952 to date in the sales of Guiderol bearings have you had any reports of failure where the race ring carrying the guide rail was on the rotating race of the installation? A. No, I have not.

Q. During the period from 1952 to date can you make a comparison within your experience between the life of a Guiderol bearing where the guide rail is rotating and the installations where the guide rail is stationary?

A. Well, in my experience the life of the bearings has been the same. We have no failures, and so they have given good service and I would say that—— [168]

* * * * *

Q. (By Mr. Mueller): I hand you a print marked for identification Defendant's Exhibit M.

(Testimony of Virgil A. Hoffman.)

Will you please state what it is, and I will hand it to you in a minute, Mr. Hoffman.

* * * * *

A. This is an application, or this drawing is an R.P.B. Corporation drawing of a wheel on their steel slab breaker and it incorporates two Guiderol bearings identified here as GRI 5212 wheel bearing.

Q. Were Guiderol bearings such as are illustrated in that print purchased from your company?

A. Yes.

Q. Did you obtain this print marked for identification Defendant's Exhibit M in the ordinary course of your business? A. Yes, sir.

Q. In the Guiderol bearing installation of that print does the guide rail rotate or is it stationary?

A. It rotates. It is pressed into the hub of the wheel and [169] as the wheel rotates the outer ring with the guide rail on it turns with the wheel.

Q. Is the Guiderol bearing of the installation in the print to which you have testified sold with one or two race rings?

A. There are two race rings.

Q. And do I understand that the guide rail in the bearing is on the race ring which is rotating?

A. That's right, sir.

Q. That is in the installation represented by the print marked for identification Defendant's Exhibit M? A. That's right.

* * * * *

Q. (By Mr. Mueller): So far as a race ring and a guide rail and a roller portion of a Guiderol

(Testimony of Virgil A. Hoffman.)

bearing is concerned, Mr. Hoffman, is that structure present in the Hillman-Kelley and the R.P.B. installations to which you have testified?

A. Yes.

Q. Can you tell us some of the different types of mechanisms or equipment where you know that a Guiderol bearing such as you have testified to was actually installed? [170]

A. Well, we have sold them for wheels such as this R.P.B. drawing, Crane wheels, sheaves, hoists —pulleys, rather. I think that is the general——

Q. Considering a pulley installation, do you know of your own knowledge that Guiderol bearings were installed in pulley applications?

A. Yes, sir.

Q. Would a pulley in such an installation normally operate on a stationary shaft?

A. Yes, sir.

Q. In a representative pulley installation or a Guiderol bearing would the guide rail be on the rotating or the stationary race?

A. It would be on the rotating race.

Q. Could we say, Mr. Hoffman, that in pulley installations with which you are familiar, Guiderol bearings are always mounted so that the guard rail is on the rotating race? A. Yes, sir.

Q. Have you ever had any complaints from customers to whom you have sold Guiderol bearings where you know that the bearing went into a pulley installation? A. No, sir. [171]

* * * * *

(Testimony of Virgil A. Hoffman.)

Q. (By Mr. Mueller): Will you please tell us what this bearing is that I have handed to you?

A. Is is a nonseparable Guiderol bearing.

Q. And what do you mean by a nonseparable Guiderol bearing such as the bearing marked for identification Defendant's Exhibit N?

A. Well, as we illustrated before with defendant's Exhibits I believe I and J, the inner race would slide out in either direction; there was nothing within the bearing to hold it there. However, in this bearing there is a rail on both the inner and outer races, on the inside of the outer race and on the outside of the inner race, and these rails both project into the recesses of the roller and hold the bearing together in such effect.

Q. Is the rail on the outer race ring in that bearing integral with the race ring on the inside of the raceway, Mr. Hoffman? A. Yes, it is.

Q. And is the ring on the raceway of the inner ring separable, as we call it?

A. It can be removed, yes, sir; it is not a part of it.

Q. That is what you mean by separable, it is not integral? [172] A. That's right, sir.

Q. Have you sold Guiderol bearings of the nonseparable type? A. Yes, I have.

Q. Have you ever had any reports of failures of such bearings, Mr. Hoffman?

A. No, I never have.

Q. To your knowledge do both rings inside the raceway have some guiding function?

(Testimony of Virgil A. Hoffman.)

A. Yes, I would say they do.

Q. In Defendant's Exhibit A, the file wrapper of the patent in suit, in paper No. 4 and on page 4, lines 2 to 4, the following statement appears, and I quote — this is the file wrapper of the patent 2334227 in suit:

> "In order to prevent skewing the ring would have to be carried by the stationary race of the bearing."

End of quote. Based on your observations of Guiderol bearings which you have sold and are in actual operations, do you agree with that part of the statement which I read which states that the ring would have to be carried by the stationary race of the bearing? A. No, I couldn't agree with that.

Mr. Mueller: That is all. [173]

Cross Examination

Q. (By Mr. White): Mr. Hoffman, when was this Bearing Specialty Company formed?

A. Well, I am not exactly sure of that. However, in September of '55 we started to operate under the name Bearing Specialty Company in Los Angeles and Maywood.

Q. Is that a separate corporation?

A. I don't know that, sir; it is the succeeding corporation to Casey Bearing.

Q. Is it a corporation? A. Yes, sir.

Q. And did you or did that corporation purchase the business in Los Angeles from Casey Bearing Company?

(Testimony of Virgil A. Hoffman.)

A. I am not familiar with the corporate structure, sir.

Q. What is your office in that corporation?

A. Well, I am a vice-president or general manager—and general manager of the Southern Division.

Q. Do you have directors' meetings?

A. No, sir.

Q. Never?

A. I meet with the president and secretary-treasurer very often but it isn't—I don't think that is considered a directors' meeting.

Q. Did anybody ever tell you whether that corporation of which you are vice-president purchased the Los Angeles office [174] and business of Casey Bearing Company?

A. Well, we just changed our name from Casey Bearing. Casey Bearing bought out Bearing Specialty Company.

Q. Oh; then what happened here was you changed the name from Casey Bearing Company to Bearing Specialty Company; is that right?

A. That is my interpretation, yes.

Q. Then it is not a new corporation?

A. Well, whether they dissolved the old one and formed a new one, I am not prepared to say.

Q. Are you still a branch of the Casey Bearing Company?

A. Well, we operate all stores as Bearing Specialty Company.

(Testimony of Virgil A. Hoffman.)

Q. Do you report your sales to Casey Bearing Company in San Francisco?

A. They get a copy of our invoices; we don't report in the sense that we make out a report of sales.

Q. But you send copies of your invoices to Casey Bearing Company in San Francisco; is that right?

A. Yes, sir.

Q. Does your company or do you deal with a corporation named McCulloch Motors Corporation?

A. Yes, sir.

Q. Do you sell any Guiderol bearings to them?

A. Yes, I have sold Guiderol bearings to them.

Q. About what is the volume of sales to that company? [175]

A. Well, their business is chain saws and it is a seasonable or a seasonal and competitive business. Taken on a yearly basis I wouldn't know just what to say; maybe a thousand, maybe two thousand.

Q. A year? A. A month.

Q. A month? A. Yes.

Q. Are you selling them the kind of Guiderol bearings where the outer race rotates or where the shaft of the inner race rotates?

A. The shaft rotates in that application.

Q. You mentioned in your testimony the Hillman-Kelley Company and the R.P.B. Corporation. Is there any other account you could name to whom you are selling Guiderol bearings where the outer race rotates in the application?

(Testimony of Virgil A. Hoffman.)

A. Yes, we have sold them to the Crane Veyor Company.

Q. Anybody else?

A. We have sold them to Downs Crane and Hoist.

Q. Anybody else?

A. There was one crane outfit that operated under two names. We either sold them as Angelus Engineering or National Standard Crane Components; it would have been to one or the other.

Q. Would it be correct to say that the majority of the sales [176] of your bearings are the kind where the outer ring rotates?

A. Not in the majority of applications, no.

Q. Which would be the majority of applications, where the inner race rotates or where the outer race rotates?

A. Well, I would say that is hard to say, because many cases we don't know where the bearing is being used; but in our large volume accounts, I would say McCulloch Motors is inner race rotation, Hillman-Kelley—well, I just couldn't—I would say that possibly we have as many of each in our regular accounts.

Q. Could you tell me approximately your gross volume of Guiderol Bearing sales for the year of 1955?

A. Dollar volume?

Q. No, number of Guiderols.

A. No, I'm afraid I couldn't without checking the records. [177]

Q. What proportion of the gross business in

(Testimony of Virgil A. Hoffman.)

guide rail bearings approximately would be those accounts that you just mentioned, including R.P.B. Corporation, Hillman-Kelley and a few others you mentioned to the total Guiderol business you handle? A. Are you including McCulloch in that?

Q. Yes.

A. I would say that is probably 90 per cent of our Guiderol business.

Q. You mean 90 per cent of your business would be R.P.B. and Hillman-Kelley—is that 90 per cent of your Guiderol business?

Including McCulloch Motors in that question I was asking you—is McCulloch Motors using bearings where the outside race rotates?

A. No, sir.

Q. I was trying to establish the proportion of the business where the outside race rotates to the gross business of Guiderol bearings themselves of all kinds.

A. Well, I would almost have to study that, but our biggest account is McCulloch Motors Corporation, and that is inner race rotation. I would say probably 50 per cent of our sales would be represented by outer race rotation. I mean 50 less, say, than one-third of our total sales would be outer race and two-thirds would be inner race rotation, but [178] that of course is one application.

Q. In these cases are you selling in each case a roller bearing without an inner race and then the inner race is sold separately?

A. No, sir. Hillman-Kelley buys in one case the

(Testimony of Virgil A. Hoffman.)

bearing complete with an inner race. However, McCulloch does not use an inner race, and the cluster gear assembly, Defendant's Exhibit K, does not use an inner race.

Q. If as you said at least one-third of your Guiderol business is in this outer race rotation guide rails like Hillman-Kelley, you say you handle those outer race rotations with the inner race together, if I correctly understood.

A. That is one. I would say in that case where they do have an inner race, that is probably 20 per cent of Hillman-Kelley's purchases. They buy many more for the application that does not have an inner race. However, they are all outer race rotation.

Q. Would that be more than 50 assembled units?

A. Yes, I would say so.

Q. Do you wish to correct your testimony which you stated that within the last five years you sold only about 50 assembled units with inner rings and outer rings assembled together?

A. Mr. Mueller asked me if we sold them in our store. We do not sell those in our store. We just solicit the business [179] and those are shipped by McGill. We do not sell them ourselves. I mean we do not deliver them. We do not buy them and sell them.

Q. You take orders for them and send the orders to McGill? A. That is right.

Q. It would be more than 50 assembled units in five years that were sold through your efforts with the inner rings and outer rings assembled?

(Testimony of Virgil A. Hoffman.)

A. Yes, there would be more than that.

Q. Substantially more?

A. Well, I don't know exactly how many. I would say there probably would be 500 of that particular assembly.

Q. You knew you would be called to testify today, didn't you?

A. Well, I didn't know whether McGill's sales were going to be considered our sales or not. I mean, I didn't think they were.

Q. Do you use the same catalogues in your business, your soliciting business, as Casey Bearing Company in Guiderol bearings? A. Yes, sir.

Q. Are you acquainted with the catalogue, "McGill Precision Bearings", Plaintiff's Exhibit 17, which I will show you here? A. Yes, sir.

Q. Do you use that in your sales efforts? [180]

A. Yes, sir.

Q. Will you take that catalogue, please, that you have in your hand, and refer to the information there beginning at page 9 of that catalogue, which is from then on engineering information as to the users of these various bearings, is that right?

A. Yes, sir.

Q. There are various formulas shown for the various applications of the bearings, is that correct?

A. Yes.

Q. That continues on in those pages. Could you point out in the applications there about how many examples there are in which the outer races revolve and how many where the outer races are stationary?

(Testimony of Virgil A. Hoffman.)

A. Do you want to consider ball bearings, too?

Q. In general, yes.

A. On page 9 you have inner race rotation, I would say.

Q. There are two applications with inner race rotation?

A. Well, no, I would have to take that back. That could be a spindle, in which case it would be inner race rotation or it could be mounted in—well, it could be mounted in a wheel or anything.

Q. Did you read the legend which says, "In the straddle mounting the reaction on both bearings is opposite to the direction of RL." Isn't RL the rotating part meaning radial [181] load?

A. The radial load is, straddle mounting means; I would assume that the load is carried between two bearings rather than overhung as it would be in the right hand figure where the load would be applied outside the bearings.

Q. The load arrangement is different in both of them, but in each of them isn't it true the shaft would be rotating?

A. Yes, it would indicate that by indicating the load as applied on the shaft.

Q. Go to page 10. A. That is page 10.

Q. Would you be surprised if I told you, or could you corroborate it, that there are 47 examples in that catalogue of stationary outer races and three examples of revolving outer races?

A. I would not be surprised, sir, if you think of an automobile. I can only think of one case of

(Testimony of Virgil A. Hoffman.)

outer race rotation while all the others are inner race rotation. The front wheels are outer race; everything else is inner race.

Q. Would you consider that approximately the correct proportion of the applications so far as this type of bearings are concerned as between rotating inner races and outer races?

A. I will say that this type of bearing is used mostly in installations where your load is heavy and your speeds are [182] slow, and there are other means taken or other means provided to take the thrust load in the bearing. Now these bearings of the roller type as illustrated in the McGill catalogue will take thrust. So they are very limited in the general broad sense of bearing applications.

Q. Don't you realize the same bearing in Section 3 is devoted to Guiderol bearings?

A. Do I realize what?

Q. That in that catalogue Section 3 is devoted to Guiderol bearings?

A. Well, you mean from page 75 on?

Q. From page 73 on.

A. You have a different book than I do.

Q. Apparently. There is a section on Guiderol bearings giving dimensions, is that right?

A. Yes, sir.

Q. And the various series give examples.

A. All right. On page 77 in my catalogue there are four various mountings, what they describe as typical mountings, and in the first figure I would say that that is all inner race rotation. In the sec-

(Testimony of Virgil A. Hoffman.)

ond figure that is outer race rotation. The third figure multiple, what they call traveling blocks, I believe, and those are outer ring rotation, and then the oil pumping saddle mounting would be an inner race rotation. [183]

Q. Do you know the approximate proportion of that business where Guiderol bearings are used in pumping units? A. I do not sell any.

Q. On the Pacific Coast?

A. I don't know. I don't sell any in Los Angeles.

Q. As to Exhibit K, this drawing of cluster gear assembly, Hillman-Kelley Company, you stated that you observed the operation of this gear assembly. Where did you observe it?

A. At Hillman-Kelley Company. [184]

Q. Do they use these units or did they manufacture them for sale?

A. They make the casing tong, that is, the complete unit, and this is a part of it, and they sell the casing tongs.

Q. Did I understand you correctly? You stated that this was purchased from you over a period since about 1953?

A. We have been selling Hillman-Kelly Company since about 1953.

Q. About what month?

A. Well, I couldn't say that. I would imagine about the middle of the year.

Q. You stated you received this particular print,

(Testimony of Virgil A. Hoffman.)

Exhibit K, in the ordinary course of business. When was it that you received it?

A. I would say about a month ago.

Q. What was the ordinary course of business for which they gave you this blueprint?

A. I asked them for it. I asked our salesman to get it for me.

Q. Did you ask for it in preparation for this trial? A. Yes, sir, I had that in mind.

Q. This drawing is dated March 13th, 1956.

A. Yes, sir.

Q. So this drawing was especially prepared for the purpose of this trial? [185]

A. No, that is not the purpose. That was not prepared for that. The drawing is prepared for parts. Is that the one with the inner race in it?

Q. I don't know what it is. This is the one you testified to that it was an outer race.

A. No. I would say that drawing is made up for giving to people who buy the tong, so they can order parts for that unit.

Q. How is it they made this up on March 13, 1956 just a few weeks before this trial?

A. That is a coincidence, I would say.

Q. In the ordinary course of business, that would be received and made for you just when you order it?

A. As I say, this a parts list, the drawing says. They did not make it for me, sir.

Q. It is just a coincidence it is given to you.

(Testimony of Virgil A. Hoffman.)

It is stated as being made on or about the day you asked that they deliver it to you, is that right?

A. I don't remember what day I went in there, but I feel confident they did not make that up for me. I don't know the people that well.

Q. You have another Hillman-Kelley drawing here which is not a part of the parts list, and that is Exhibit L. Did that come to you in the same way?

A. We got both drawings at the same time, yes.

Q. You say you called them up about a month ago.

A. I went over there a month ago. I didn't call them up.

Q. By coincidence this is also dated March 13th, 1956?

A. It is possible.

Q. So when you refer to the ordinary course of business in receiving this, that meant you went over and asked them to give you a print for the purpose of this trial, is that right?

A. I went over there and I asked them for a print. I do not say they made it up at the time I went there.

Q. Did you ever ask them for a print before?

A. Yes, sir.

Q. When?

A. When they first developed this application.

Q. When?

A. I would say that was about 1953.

Q. Where are those drawings?

A. We sent them back to McGill.

(Testimony of Virgil A. Hoffman.)

Q. You did not keep any copies?

A. No, sir.

Q. Since then have you ever had occasion to ask them again for a print?

A. Since I asked for these?

Q. No, since 1953. A. No.

Q. Wouldn't it have been easier for you to write to McGill [187] to send you out the 1953 print?

A. They have changed their design slightly.

Q. In which respect did they change their designs?

A. They now have a 7/8 inch shaft where they previously had a three-quarter inch shaft.

Q. The size of the shaft, is that enough difference in illustration of operation of those bearings to justify making blueprints for you?

A. As it says here, these are parts lists and if they had a three-quarter inch bearing, it would not fit on the 7/8 inch shaft. So the shaft would not be the same, and nothing would be the same.

Q. When was the change made?

A. I do not know that.

Q. How do you know that there was a change made?

A. We stopped selling them GR12 and we started selling them a combination of two GR14 and one GR14M.

Q. When did this change take place?

A. I would have to check our files on that.

Q. Can you approximately remember whether

(Testimony of Virgil A. Hoffman.)

it was a month ago, two months ago, five months ago?

A. Oh, no, I would say it was at least a year ago.

Q. Wouldn't it be reasonable if it was a year ago that they prepared the parts list a year ago instead of March 16, 1956? [188]

A. I do not know when they prepare their parts lists, or I do not know that this is a reproduction of a former drawing.

Q. But that drawing is dated March 16th, 1956.

A. March 13th, 1956.

Q. And that coincides approximately with the date when you requested it?

A. I was over there in mid-March, some time in mid-March, yes, sir.

Q. You were asked whether you could make a comparison between the life of a bearing in which the inner race rotates as compared with the life of a bearing where the outer race rotates. What is the life of a bearing where the inner race rotates?

A. That depends on a number of factors. It depends on what the man wants from the bearing.

Q. When you made the comparison, what factors did you consider?

A. Satisfactory service for the application.

Q. When you answered this question of counsel about the comparison, just what factors did you have in mind?

A. Well, only that the customer is buying a bearing for a specified job, and that apparently it is

(Testimony of Virgil A. Hoffman.)

satisfactory in performing, giving him the life he expects from that bearing.

Q. Then you did not make a comparison, did you?

A. Well, you would have to quailfy any comparison. [189]

Q. You were asked as to comparison as to the life of bearings. What is the life of a bearing?

A. According to this catalogue, I believe the average life would be 2500 hours.

Q. Did you have in the report from any company as to how many hours they operated any of those bearings without the bearing breaking down?

A. Since we sold the bearings, since we originally sold this type of bearings, we have had very few complaints.

Q. Which was the few complaints?

A. We had quite a bit of trouble with McCulloch Motors.

Q. For what reason?

A. Well, when we first sold them the bearing, I think we originally had too sharp a corner or something that would scratch shafts. In other cases, they had the retaining rings breaking on them.

Q. Those are the only complaints you heard?

A. That is about all.

Q. Referring to Exhibit N, do you have that before you? That is that so-called non-separable bearing. A. Yes, sir.

Q. To whom are you selling that?

(Testimony of Virgil A. Hoffman.)

A. To Douglas Aircraft Company.

Q. Did you sell them in production?

A. Yes. I did not consider it production myself, but the [190] factory interpreted it that way and sold them direct.

Q. In what volume?

A. Well, there were, I would say, three or four sizes and they would place an order for, say, 25 a month, 50 a month or 100 a month. You see what they did, they used them in the pump and they do not manufacture the pump, but they use this pump in conjunction with the super-chargers in all the DC series airplanes, and they built the balance of the equipment from the pump on out.

Q. Is that experimental installation?

A. Oh, no, sir.

Q. Why is it the bearing is marked by hand scratching instead of the usual marking of bearings?

A. I imagine this is a sample bearing.

Q. That is not the bearing you are selling, is it?

A. That is similar. That is the construction of the bearing.

Q. You observe that that is marked by hand scratching, the type and all the legends.

A. That is right. That is electric pencil.

Q. Do you mark all new bearing individually by electric pencils? A. No.

Q. How do you mark your production bearings?

A. They are stamped, I presume. [191]

Q. The Exhibit N is not one of those which is stamped, is it? A. No, sir.

(Testimony of Virgil A. Hoffman.)

Q. Is it true that that bearing was made for purposes of this trial?

A. Well, I couldn't tell you that.

Q. Did you produce a bearing from the Douglas Aircraft? A. Yes, sir. May I ask a question?

Q. No, you just answer the questions.

A. Yes, sir, I brought some with me but I do not know if I have them here with me or not.

Q. The same kind of bearings?

A. The same construction, yes, sir.

Q. Exactly the same?

A. Well, not exactly the same. I have one of the same idea, the same O.D., but it is a narrower width, and it is a non-separable bearing just the same as this.

Q. How many hours did those bearings work now?

A. The bearings that I brought with me?

Q. No, the bearings that were installed in Douglas.

A. Those were installed in Douglas. They have a guarantee on their super-charger when they send it out. If they sold a plane, say, to Western Airlines or United or if they replace a supercharging unit in it, they guarantee it for a specified number of hours, and at the end of that time it is up to the customer whether he wants to bring it in for overhaul or take [192] a chance and use it, but I believe most of them bring it in at the end of that guarantee period and have them overhauled again.

(Testimony of Virgil A. Hoffman.)

Q. How many hours is that?

A. I believe in some it runs up to 2500 hours. Some may be as low as 1,000 hours.

Q. When is the first time that this bearing, Exhibit N, was sold to Douglas?

A. The first time I sold them to Douglas was in 1953.

Q. But when in 1953?

A. I couldn't answer exactly.

Q. Will you look in your catalogue there? I believe I took your catalogue. A. I have it.

And see whether or not the bearing is in that catalogue. A. It is not a catalogue size, sir.

Q. It is not offered to the public for sale?

A. I do not think it is, sir. I will look. No, sir, it is not a catalogue item.

Mr. White: That is all the cross examination.

Redirect Examination

Q. (By Mr. Mueller): Mr. Hoffman, on the Guiderol bearing of the non-separable type, Defendant's Exhibit N, is that bearing cut away so that the roll on the outer race ring and the ring on the inner race is visible? [193] A. Yes, sir.

Q. To that extent, of course, Mr. Hoffman, that is not a production bearing in that form.

A. No, sir.

Mr. Mueller: Would it be possible, your Honor, to show that to the jury, the cut-away so they could see the construction? I thought it might help.

(Testimony of Virgil A. Hoffman.)

The Court: You may show it to them if you wish.

(Defendant's Exhibit N was thereupon displayed to the jury by Mr. Mueller.)

Mr. White: We might say at this time, we can't make a motion to strike exactly because we do not know the purpose of introducing this particular bearing in evidence, but in order not to waste any undue testimony on it, we do not claim that this particular bearing, Exhibit N, is within the scope of the claims of the patent in suit or that it would infringe.

The Court: Counsel, you are not talking to the jurors, are you? Just show it to them, counsel. They can pass it around.

Mr. Mueller: They can pass it around, can't they, your Honor?

The Court: I understand your opponent says he is not claiming that Exhibit N is an infringement of the patent in suit.

Mr. Mueller: I see. Then from an infringement standpoint [194] he is not claiming that as an infringement.

Mr. White: That is correct. We do not claim that Exhibit N infringes. It has two rails and all the claims for this patent are on a single rail.

Mr. Mueller: I might say, your Honor, that that is illustrative of a guide rail bearing as sold under that trademark with two rails, and in the prior art there will be prior patents with the rail on the inside and the outside.

(Testimony of Virgil A. Hoffman.)

The Court: If it is not claimed as an infringement, it is academic here. It is waste of time to show it. [195]

* * * * *

(Whereupon brown book was received in evidence and marked Defendant's Exhibit Q.)

[See Book of Exhibits.]

* * * * *

The Clerk: Defendant's Exhibit P introduced and filed in to evidence.

[See Book of Exhibits.]

* * * * *

M. F. SPOTTS

called as a witness on behalf of the defendant; sworn.

The Clerk: Please state your name to the Court and to the jury.

A. M. F. Spotts.

The Clerk: Please spell your last name.

A. S-p-o-t-t-s.

Direct Examination

Q. (By Mr. Mueller): Dr. Spotts, will you please state your age and your place of residence.

A. My age is 60. My residence is No. 320 Woodland Avenue, Highland Park, Illinois.

Q. And what is your present occupation?

A. I am a teacher at Northwestern University, Evanston, Illinois.

Q. How long have you been teaching at Northwestern University?

(Testimony of M. F. Spotts.)

A. I came to Northwestern in the fall of 1941.

Q. Over the period since 1941 what subjects have you taught at Northwestern University, Dr. Spotts?

A. I teach mechanical engineering subjects, those concerned mainly with mechanical design of machinery and equipment.

Q. Is all of your teaching in the graduate school of Northwestern University at the present time?

A. No; approximately half is undergraduate and half would [197] be graduate subjects.

Q. And is all of your teaching on mechanical engineering subjects? A. It is.

Q. Before going to Northwestern University in 1941, did you have other teaching experience?

A. Yes, for three years previous to that I was at Johns Hopkins University at Baltimore, Maryland.

Q. What subjects did you teach at Johns Hopkins University?

A. I taught the same subjects as I am now teaching at Northwestern.

Q. Will you please tell us the colleges you attended prior to your teaching experience at Johns Hopkins and Northwestern Universities?

A. In 1923 I graduated in mechanical engineering at Ohio Northern University. In 1933 I got a Master of Arts degree in mathematics at Ohio State University and in 1938 I got a Doctor's degree in applied mechanics at the University of Michigan.

(Testimony of M. F. Spotts.)

Q. Have you published any books in the field of mechanical engineering?

A. Yes, I have published one book. It is a textbook on machine design. The title is Design of Machine Elements.

Q. When was your book originally published, Dr. Spotts? A. It was first published in 1948.

Q. Has it been republished?

A. Yes, I revised it once and it was republished in 1953.

Q. What can you say as to the general recognition of your textbook in the field of mechanical engineering?

A. The publishers claim that it is the most widely used text printed in America in engineering colleges for instruction in this subject. It is also published in England, mainly for the export trade. I have had correspondence from people in various foreign countries, so I am led to believe that it is pretty widely distributed.

Q. I have a copy of your book in my hand, and Chapter 9 I notice is entitled, "Ball and Roller Bearings." Where did you get the material from which you wrote the Chapter 9 on ball and roller bearings?

A. The source material for this chapter came mainly from catalogues and other printed literature of the leading makers of ball and roller bearings. Such literature is perhaps the best source of information on this subject.

Q. In your teaching experience at Johns Hop-

(Testimony of M. F. Spotts.)

kins and Northwestern Universities, have you considered the theory of anti-friction bearing operation?

A. Yes, I have considered it at some length.

Q. In your academic experience have you had anything to do with the roller type of anti-friction bearing?

A. Yes, I have had to consider that, too. [199]

Q. And when we talk about anti-friction bearings, is that the broad term for all bearings that have rolls or needles or balls, Dr. Spotts?

A. Yes, that is the generally used term.

Q. What, if any, experience have you had in the field of mechanical engineering in addition to your teaching experience to which you have testified?

A. On graduation in 1923 I went—I enrolled in the Engineers' Training program of the Packard Motor Company in Detroit, Michigan. Later I spent five years with the Brown Steel Company at Columbus, Ohio. After that I spent two years with the Jeffrey Manufacturing Company, Columbus, Ohio. Here my work was concerned mainly with the design of conveying—material-handling equipment—conveyors, elevators and machinery of such type. Among other things I designed some machines that were used on the excavation at the Grand Coulee Dam. These were the largest machines of the type that had ever been built up to this time. I am also a consultant to a number of industrial firms in Chicago and vicinity, and have kept up

(Testimony of M. F. Spotts.)

with the practice of engineering outside of the school.

Q. Referring to the bearings sold by defendants under the trademark Guiderol as represented by the assembly that is in evidence, Defendant's Exhibit J, are you familiar with that structure? [200]

A. I am.

Q. Dr. Spotts, have you observed Guiderol bearings of the type that you just referred to in actual installations? A. I have.

Q. Have you tested any of the Guiderol bearings under similated operating conditions on a test board? A. Yes, I have made such tests.

Q. Have you studied Plaintiff's patent 2334227 in suit? A. Yes, I have studied his patent.

Q. And can you find any statement in the Stallman patent wherein he gives the general object for his alleged invention? A. Yes.

Q. Will you please read the same?

A. On page 1, column 2, beginning at line 6, I quote:

> "A further object of the invention is the provision of a needle type bearing in which the thrust action set up by misalignment of the needles is minimized and is self-correcting through the roll action of the bearing."

End of the quotation.

Q. Dr. Spotts, will you just go a little slower when you identify it so that His Honor may follow, if he wishes, identifying it and then reading it.

(Testimony of M. F. Spotts.)

The Court: It is more important for the jury to follow [201] the document.

Q. (By Mr. Mueller): Will you read slowly then—Will you point out, identify it and then read slowly? I just wanted to identify it, sir.

The Court: He has already read that provision. What is the question now?

Q. (By Mr. Mueller): Does the plaintiff in his patent describe how the objective of his patent is accomplished, and as you do so, will you please refer to the chart of the patent 2,334,227 so that the jury may follow the items that you refer to?

A. This would be on page 2 in the second column beginning at line 30, and I quote:——

Q. Do you have a pointer there, Doctor?

A. There is one right here.

To quote:

"Referring now to Fig. 7 wherein three needle rolls constructed in accordance with the present invention, are diagrammatically illustrated, the central needle roll has assumed the same misaligned position and has come into frictional engagement with the ring 15 at the point a. The needle rolls are in this case also rolling in the direction of the arrow b, but the force which tends toward misalignment takes place only between the point a and the left-hand end of the needle. [202]

This is less than one-half the length of the needle. On the other hand, the force tending correct this misalignment or advance the re-

(Testimony of M. F. Spotts.)

tarding position of the needle takes place between the point a and the righthand end of the needle which is more than one-half its length. Consequently, the tendency in normal operation of the bearing is for the misaligned needle to assume proper alignment rather than to increase its angularity and transmit the same to all of the needles in the bearing."

End of quotation.

Q. Considering the two Guide rail bearings of Figure 5 of the patent and the one guide rail bearing——

The Court: Counsel, may I interrupt you?

Mr. Mueller: Yes, sir.

The Court: What is it you had him do there except to read the patent and describe it on the drawing?

Mr. Mueller: I am doing it, sir, to set the stage for the demonstration of prior art and the operation of the prior art devices. [203]

* * * * *

Mr. Mueller: That is in Defendant's Exhibit O, your Honor. You follow me?

Q. I notice on the chart, Dr. Spotts, the word "Haddan." This is the patent, is it not, of Oswald Francis Zahn of Los Angeles, California, and does that appear in the specification of the British patent?

A. Yes, the name Zahn appears in the specification.

Q. And Haddon is referred to in this specifica-

(Testimony of M. F. Spotts.)

tion as the patent agent or solicitor; is that correct?

A. Yes, he is the solicitor for Mr. Zahn.

Q. So that the chart is actually a reproduction from the Zahn patent; is that correct?

A. That is correct.

Q. Referring to the Zahn British patent 17841 and pointing out on the chart, will you tell us in your own words what the British patentee, Mr. Zahn, says about the operation of the bearing of that patent?

A. In his specification Mr. Zahn in British patent 17841 refers to Figure 1 of the diagram by which he explains his operations. He says he has a fixed race which he represents as element (e), and he has a roller (a), and the roller has enlarged portions on either end, and then another race bearing upon the top of the roller would be (c) moving in the direction of the arrow. Mr. Zahn says that if roller (a) becomes skewed and misaligned, as soon as it does so it will roll over, downward in this case, until its enlarged portion (d) comes into contact with edge (e) of the race, and when it hits the edge there, there will be a friction set up which will retard the forward end, and at the same time this other race (c) here is moving and will shove forward the lagging or rearward end until the roller will become straightened out again, and then it will proceed in a direct line as it is supposed to do.

Q. Can you compare the operation as described in the British patent with the operation as described in the Stallman patent in suit?

(Testimony of M. F. Spotts.)

A. Yes. The wording might be different, but the effect is exactly the same.

Q. In so far as both patentees are concerned, in the British patent and in the Stallman patent, what can you say as to the results in the two bearings while they are in operation in so far as skewed or misaligned rollers are concerned?

A. The end result is supposed to be the same in Stallman patent 2,334,227 and Zahn British patent 17841 in so far as both of them describe a method for causing the roller to right itself.

Q. Referring to the British chart, what is the ideal [206] position stated for a load carrying roller, and will you identify it?

A. In British patent 17841 the load-carrying rollers are designated by the letter (a) in Figure 2 and in Figure 4 and in Figure 6, and the ideal position of such a roller would be parallel to the axis of the two races.

Q. And that is the ideal position of a roller in the Stallman patent?

A. Yes, that is the ideal position in the Stallman patent also.

Q. What causes load-carrying rollers such as those in the British and the U. S. patents in suit to become misaligned or skewed, Dr. Spotts?

A. The principal cause of misalignment of the load-carrying rollers would be a misalignment of the two races of the bearing. They are not quite parallel; the two races assume a position at a slight angle with each other, and therefore the load-carry-

(Testimony of M. F. Spotts.)

ing rollers will assume another angular position different with both of the races.

Q. And that is the situation with the bearing in each patent when the roller skews or becomes misaligned? Is that correct, Doctor?

A. Yes, that is correct in these two patents and other roller bearings, too.

The Court: What do you mean by that? What causes it? [207] The pressure?

A. The shaft might deflect. In other words, the shaft might tip down a little bit and would carry the inner race with it, and therefore the inner race would be off at a slight angle. The outer race would be horizontal and the inner race might be just down a little bit.

The Court: And when that happens?

A. Then the roller takes a position of its own slightly different to both of them. [208]

Q. Can you compare in any other way the structures and functions of the bearings of the two patents, that is, so far as anti-friction bearing units are concerned?

A. Both of these patents, Stallman 2334227 and Zahn British patent 7841 are anti-friction devices, bearings. They consist of the same essential parts. There are some mechanical details, but essentially they are the same device.

The Court: What is the structural thing that enters into this English patent that you say would correct the misalignment?

A. He accomplishes what I went through on

(Testimony of M. F. Spotts.)

this diagram. Do you mean what does he do to his bearing to make this happen?

Q. What is there inherent in the nature of the structure which he describes that has the effect of tending to correct misalignment? What does the structure itself do to accomplish that?

A. He provides a reduced portion in the rolls and he provides a rail on the race and arranges the dimensions in such a way that this roll on the race comes in contact with the shoulder in the reduced portion of the roll and holds the head end of the roller back and lets the tail end catch up.

Q. What does Mr. Stallman do?

A. Mr. Stallman does the same thing.

Q. Mr. Mueller: That, Dr. Spotts, is the way the two [209] patentees describe their operation?

A. Yes, that is according to the patent, each patent.

Q. Will you please turn to United States Kinster patent 585580, issued on June 29th, 1897, and that, your Honor, is the non-cited collection. We might just take this, Dr. Spotts. We have a reproduction.

* * * * *

Q. (By Mr. Mueller): Referring to the chart which is an enlarged reproduction of the drawings of the patent 585580, will you simply point out those elements in the drawings and identify them as you go through them which affect a roller during the operation of the bearing?

(Testimony of M. F. Spotts.)

A. Should I include the skewing correcting feature?

Q. Yes, will you do that, please? May I say first, Doctor, may I ask first, does a bearing such as that illustrated in the Kinster patent affect skewing or act upon a skewed roller when that skewing occurs?

A. There would be an effect upon the skewed roller.

Q. Will you please point out the structure of Fig. 2? Will you take that, please?

A. In Fig. 2 of Kinster patent 585580 there is an outer race No. 2. This outer race No. 2 has a rail 4 integral with it. Then there is a plurality of load carrying roller 6 which [210] have a reduced portion or groove No. 7 intermediate the two ends.

In Fig. 2 there is an inner race, which is the shaft itself in this case, and it is shown dashed as element No. 8.

Then there is a retaining spring No. 10 which enters the groove in the roller and presses outward for the purpose of holding the rollers in place against the outer race for purposes of transportation.

This Kinster patent also has another element in it, a separating roller No. 9, which is simply a disc of metal shown down here in Figures 7 and 8 and they are placed between the load carrying rollers in the groove, and they serve to keep the main load carrying rollers separate from each other.

Q. Is there a retaining spring that holds the

(Testimony of M. F. Spotts.)

rollers in the assmbly, in the outer race ring assembly, if the roller bearing of Fig. 2 is separated from the shaft?

A. Yes, there is. That would be this spring No. 10 in Figure 2 of the Kinster patent. It is shown here again, No. 10 in Figure 1. It is shown in detail down here in the two figures 9 and 10 at the bottom.

Q. In the bearing illustrated in Fig. 2 of the Kinster patent, as there illustrated would the outer race ring rotate?

A. Well, of that you could hardly say. This just shows the [211] bearing, but what the purchaser would do with it I would be unable to say.

Q. With a journal in the center does that indicate that it is rotating or fixed?

A. I do not believe that would tell me anything further. I would not know from that, either.

Q. You are just referring to the drawing as it is shown on the chart?

A. Yes, just to refer to shaft 8 in Figure 2 I couldn't say.

Q. Do you find in that Kinster patent the elements of an outer race ring with the guide rail fitting in recesses in rollers and a retaining ring for holding the rollers in the outer race ring the same as in the Stallman patent?

A. Yes, I find those elements.

Q. In that respect do you find the same elements in the British patent 17841?

A. In the British patent, Zahn 17841, there is

(Testimony of M. F. Spotts.)

no retaining spring such as these other two patents have that we have cited.

Q. If there was misalignment in the races of the bearing of the Kinster patent 585580, would the rollers skew or become misaligned in that bearing?

A. Yes, these rollers would sustain some misalignment in the same way that another bearing would.

Q. Would the guide roller which you pointed out affect the [212] skewed rollers?

A. Yes, it would have some effect upon the skewing and upon the roller.

Q. Is that effect the same as when you have a skewed roller in the Stallman patent?

A. I would say to a large extent it would be the same.

Q. Referring to skewed rollers in each of the three patents on the charts on the board, will those rollers stay skewed in the bearing during operation? And I am referring to the Stallman-Kinster and the British Zahn Patents.

A. My experience with this type of bearing leads me to believe that they would stay skewed.

Q. Would that skewing affect the same in each of those three patents, Stallman, Kinster and the British Zahn patent?

A. Oh, largely. The roller would skew. The bearing would keep going around and do the same thing.

Q. And the roller in your opinion would stay

(Testimony of M. F. Spotts.)

skewed in the bearings in each of those patents during operation of the bearing?

A. My whole experience leads me to say that they would.

Q. (By the Court): Doctor, that is a relative matter, isn't it? Let us say in a bearing there are 25 or 30 rollers inside. If they all got skewed it would not make any difference, would it?

A. Yes. [213]

A. When they all get skewed and the bearing locks up, that is where the trouble comes in.

Q. The practical difficulty of it arises because of the fact that a few of them, or less than a substantial number of them get skewed whereas the others remain parallel, is that not so?

A. No, they all skew about the same all the way around. The trouble would arise if that skewing would be so great as to lock up the bearing.

Q. What do you mean by the skewing becoming so great?

A. Just the angular position would increase enough to cause enough wedging effect in here that the races could not turn.

Q. Even if there was only one roller that went askew? A. Well, no.

Mr. Mueller: I believe Dr. Spotts misunderstood you, Your Honor.

The Court: I am not asking these questions as a lawyer for either side, but just as a simple, practical individual. I want to find out what this means practically.

(Testimony of M. F. Spotts.)

Mr. Mueller: I believe Dr. Spotts misunderstood you when he answered the first question.

Q. (By the Court): What do you mean when you say the skewing becomes bad enough? When you speak of skewing, you mean a roller that gets out of alignment? It twists or gets [214] to one side, is that right? A. Yes, it would.

Mr. Mueller: Excuse me, Dr. Spotts. I think possibly this will help you. Why don't you make your explanation from this large wooden model, if I may, Your Honor? That I think will help us all.

The Court: I was not interested for a moment in the model. I just wanted to find out what the doctor meant when he said that there was a point when the skewing would cause the—what was the word you used?

The Witness: Locking up.

The Court: ——locking up. What kind of skewing are you referring to? How much?

The Witness: These rollers are rather close together. It does not fill it up completely. You can get your fingernail in between.

Q. (By the Court): There is a space?

A. But there isn't very much space. So one roller alone to twist would be quite immaterial. When they twist they all twist all the way around and they are in a kind of spiral then.

Q. What you are referring to then is skewing by all of them? A. By all of them, yes, sir.

Q. That is what these inventors have been trying

(Testimony of M. F. Spotts.)

to solve, [215] is it, some way by which the structure could be made to prevent that?

A. Yes. The patents here, Zahn and Stallman, say that they straighten out again and run straight.

Q. According to their structures?

A. According to their structures and according to their theory of operation.

Q. So the purpose of these structures, as the inventors state them to be, is they got the structure worked out in such a way, if they did get a situation where all these rollers, instead of coming along straight, got that way—— A. Yes.

Q. ——that the nature of the structure would straighten them out? A. That it is exactly.

Q. That is what is involved?

A. That is exactly it. They would go around like this if they were straight. If they twist, they would go around and twist.

Mr. Mueller: May I help, Your Honor?

A. Dr. Spotts, I do not believe you meant to say, did you, that they lock up? They stayed skewed, but the bearing will continue to operate, will it not, with the rollers in a skewed position, even all of the rollers?

A. Oh, yes, they all stay skewed and the bearing operates. The locking up would be such a bearing where the skewing might [216] get so bad——

Q. That would be an extreme situation?

A. An extreme case where failure would be imminent.

Q. (By the Court): Then I understand you to

(Testimony of M. F. Spotts.)

say as a mechanical engineer you do not consider that skewing is of any great importance and necessary to be corrected?

A. No, it is not. The bearing operates very well even if it has got some skew.

Mr. Mueller: By that, Your Honor, I assume you mean it it not necessary for the continued operation of a roller bearing such as we have for the roller to return from the skewed position to a straight position, if I understood your question.

Q. In other words, Dr. Spotts, is it possible——

The Court: I think he has answered my question. I understand it now. You can go ahead and ask any further questions you wish.

Mr. White: May I ask at this time, instead of objecting, that counsel be admonished not to argue his case at this moment.

The Court: All right, I will tell the jury, don't pay any attention to the lawyers' arguments. You are going to have enough trouble with this matter without worrying about the lawyers' arguments. So try to do the best you can with the evidence as you hear it. [217]

Mr. Mueller: If your Honor please, you can see it means that words do become twisted up, sir, and I was trying to get them untwisted.

The Court: I was not attempting to take sides in the matter, you ask any questions you want.

Mr. Mueller: Thank you.

Q. In the structures of the three patents, the Stallman patent, the Kinster patent and the Zahn

(Testimony of M. F. Spotts.)

British patent, when there is engagement between a shoulder of the roller recess and the guide rail, is there any force developed which cancels the skewing in the roller?

A. So far as we have been able to find by tests you cannot develop enough force to make the roller straighten back out again.

Q. The guide rails in each of those patents during operation will limit the amount of skewing, is that correct, if there is engagement between the roller races and the guide rail?

A. It certainly is one of the important limiting factors.

Q. And another limiting factor is the confinement of the roller between the two raceways?

A. Yes, sir.

Q. Is that situation the same in the structures of each of the patents so far as skewing of a roller is concerned?

A. That would be so. Each of these three patents, [218] Stallman, Kinster and Zahn, they have inner and outer races. They have guide rails and shoulders on the rollers, and when the roller twists it comes in contact with the two races and with the guide rail and with the rollers on either side of it, and that effect is present in all three of these patents.

Q. Taking a guide rail bearing such as is here in suit, when the roller in that guide rail skews, does the guide rail have the same function as it does in

(Testimony of M. F. Spotts.)

the British patent and in the Kinster patent and in the Stallman patent?

A. The effect should be very nearly the same. There are some variations in proportions and dimensions which may have some effect, but largely I would say the effect is the same.

Q. So that so far as the prior bearings are concerned, represented in Kinster and Zahn, they show a structure which will do the same thing as the guide rail and race ring structure of the defendant's bearing, is that correct?

A. I would say that is largely so.

Q. Dr. Spotts, can you demonstrate for the Court and jury the skewing or misalignment of rollers in a bearing where the rollers are confined between two raceways and there is a guide rail on one of the raceways?

A. Yes, we have such apparatus here in the courtroom.

Q. Before demonstrating the action of the rollers under a simulated operating condition, would you like to explain the skewed condition again that will appear in the test equipment, [219] using the wooden model so that it will be clearer to those observing the tests? Just show a skewered roller and guide rail if you can.

A. We have here made out of wood a model which simulates the bearing of the Stallman patent. We scaled the drawing very carefully and then enlarged it 15 times and made this out of wood. This would be the roller with a single reduced portion,

(Testimony of M. F. Spotts.)

and we have another roller with two reduced portions. This large curved surface would represent a section cut out of the outer race. The outer race goes all the way around, but we will just cut a piece of it out.

This rail here is the guide rail that you heard mentioned so much in the center. We have it arranged so that we can take this guide rail off the model and put one on either side so the roller with two grooves in it could be used.

This part here represents the inner race, a section out of the inner race to the same scale as the outer race has been made.

So when the bearing is assembled we would have the outer race and the guide rail. We would have the roller with the groove, and then we would have the inner race that would stay on the assembly like this. There would be rollers closely placed all the way around through the opening between the two races. A roller that skews assumes a position——

Mr. Mueller: Excuse me, Dr. Spotts. Mr. Clerk, I have let it go——

The Court: Mark it later.

Mr. Mueller: That is what I would like to do if I may, sir.

The Court: Oh, surely.

The Witness: When the roller is square or parallel with the shaft, of course, it goes back and forth quite freely, but the skewing means it takes a position at a little angle to the axis of the race and, of course, it is being carried on around by the other

(Testimony of M. F. Spotts.)

race that is moving. And so it starts going, and it does not roll but a little bit. It starts to move toward one end, and the shoulder on the groove comes in contact with this guide rail here. That stops the motion all right from the endwise motion. Otherwise the endwise effect would keep on going and pretty soon it would be clear out of the race. It can't do that because the shoulder is stopped by the presence of the guide rail.

Then here is what happens. A roller becomes skewed, races become misaligned. They are not parallel with each other. The roller then takes a cupped-around position. The roller moves, the shoulder and the guide rail come in contact, and it just keeps on going then in that skewed position, rotating on the edge of the guide rail here.

The Court: Doctor, tell me, if as you say all the [221] rollers were moving in this skewed or not parallel position and do not cause any particular harm, why as practical engineers do some of these people seem to be interested in correcting that?

A. A small amount does not do any harm. If it is more skewing and harm would be done, of course, it would be quite nice to have it corrected. But the correction, the so-called correction devices, do not seem to operate.

Q. I was not thinking about whether they operate or not but is there not a legitimate and good reason why the engineers, the people that are engaged in buying, manufacturing and selling this type of ball bearing—isn't there a legitimate reason

(Testimony of M. F. Spotts.)

for their interest perhaps in correcting this skewing condition? If it does not cause any harm I should think they would not be concerned about it, then.

A. That is a point right there that a person could speculate on at great length, the great amount of effort that has been spent on this question, when they operate when they are skewed anyway. [222]

The Court: I can't imagine that there would be so many American businessmen that would be so silly as to spend a lot of time on it if there wasn't some reasonably good purpose to be accomplished.

A. They seem to work very well with a reasonable amount of skew. A little rubbing in there doesn't seem to hurt anything and they just merrily go on their way.

Mr. Mueller: We can demonstrate that, your Honor, if we may. Would you like to do that tonight?

The Court: No.

Mr. Mueller: We have the test equipment set up.

The Court: You put on anything you wish.

Mr. Mueller: Thank you.

The Court: You don't have to ask my permission. [223]

* * * * *

Mr. Mueller: Dr. Spotts, would you please get the test equipment in condition and——

The Witness: I beg your pardon. May I explain it first?

Q. Yes. Will you please explain what you have

(Testimony of M. F. Spotts.)

there for demonstrating the operation of a roller bearing which has a structure with a guide rail on the inner race ring?

A. We have here a test board made with an electric motor for driving two V-belts and two pulleys. The electric motor is a variable speed motor and you can change the speed by means of these resistors.

In these pulleys we have Guiderol bearings. We have one Guiderol bearing fixed up with the Guiderol on the outer race so that it is rotated. That would be the one over here. I beg your pardon. The one with the Guiderol on the outer race will be this one.

Q. That is the right one looking from the back?

A. Yes; the left one from the people on this side. On the right we have a Guiderol pulley with the Guiderol on the shaft so that it will be a fixed Guiderol.

You know it is awful hard to see inside of a roller bearing when it is moving and all these little parts are in [224] there. There has been a problem of great difficulty. We have tried to investigate it in the following fashion. We have cut away a portion of the outer race, just a small portion, and have left the remainder of the race—that is, cut away a portion on one side. At least one half of the race is full all the way around and there has been a little notch taken out of one side. We have done that on both bearings.

(Testimony of M. F. Spotts.)

Then we can start the motor and cause these bearings to buzz around. Now of course they are going around and that notch where you look in at the rollers doesn't do you very much good while it is moving. So we have a light here that we can flash on it, and this is an instrument made by the General Radio Corporation and it is called a Strobotack. It is much used in industrial research. It looks like a headlight and so it is, but a headlight with a special kind of a light. It flickers and the rate of the flashes can be varied. You can make the flashes come very fast or you can make them come very slow. So that in this setup right here we work as follows: when the bearings are going around we adjust the speed of the flashes by means of a knob on the side here and we adjust it so that each time the opening in the race comes before it we throw a beam of light on it, and with the room somewhat darkened, it looks as though that opening was standing still, even though it is going around rapidly when you [225] just illumine it when that opening comes before you each time it looks like it is standing still and we can see the position of the rollers. We will do that now and everyone can see it.

We showed on the larger roller here about what you will see. Remember, these rollers are rather small, and what you can expect to see would be the roller that is twisted over a small amount to one side, and as you look at it if you would try to sight with your eye the direction of the roller as compared with the direction of the shaft so that you

(Testimony of M. F. Spotts.)

can see that the roller really is twisted around some small amount.

Q. Dr. Spotts, in the test equipment have you caused misalignment between the inner and outer race ring or raceway of each of the two pulley installations so as to bring about skewing in the rollers?

A. Yes, we have done that. The standards here which support the pulleys are made adjustable and you can shift them back and forth so that the load from the belt doesn't come directly on the pulley but pulls off a little to one side. That tends to twist the outer race around a little bit and produces this skewing effect.

Q. That is similar to misalignment in a normal roller bearing installation where you have misalignment between the two raceways; is that correct?

A. Yes, that is so.

Q. Will that condition simulate what you have discussed with [226] respect to the two prior patents, Kempster and Zahn British, insofar as the action of the guide rail on a skewed roller is concerned?

A. Yes, these rollers are rubbing against the guide rail, and if the guide rail has any effect I am sure that we can see it here.

Mr. Mueller: Your Honor, would you like to see it, and then would it be possible for the jury to see it? You can only see the little, small aperture. How would you suggest we handle it?

The Court: Well, I don't know.

(Testimony of M. F. Spotts.)

Mr. Mueller: So that it could be observed?

The Court: The jurors can't see it where they are seated in the box.

Mr. Mueller: No, they can't, your Honor. You see it isn't possible to broaden out the light; it comes in a very confined space.

The Court: You would have to get right in front of it, wouldn't you?

Mr. Mueller: Yes, you would have to get right in front of it and there is no way that we could——

The Court: If all of the jurors congregated down in one end of the box, could they see it?

Mr. Mueller: No. Well,—yes, if we could put it right in front of them, your Honor, yes, we could. Why don't you look at it and then you see how you can suggest.

Dr. Spotts, will you show it to the Court?

Q. (By the Court): Where would they have to look?

A. They would just have to look at the rollers.

Mr. Mueller: Why don't you start it up and show His Honor?

The Witness: You see here's the opening for that one, and the other one is there.

Q. (By the Court): This is the extent of the opening right here?

A. Yes, that is the extent of the opening.

Mr. Mueller: We could demonstrate it very quickly and then you can see exactly the problem, Your Honor. Would it be possible to dim the lights?

The Court: Yes.

(Testimony of M. F. Spotts.)

Mr. Mueller: It will go very quickly as soon as we get under way.

The Witness: The speed varies enough so that you have to keep one hand on the adjusting screw all the time and that takes some little doing. Now you can see the light flashing. You can make it go slow, you can make it go slow, and you can make it go faster.

The Court: Are you going to look at them both at the same time? [228]

A. No, we will just illumine one and then shift the light across to look at the other. Now we will start this going.

Mr. Mueller: Now you started the motor to operating.

The Witness: Then we will try to bring the light into adjustment. Let's look at it over this way. Now if you can sight down from the top of the lamp and with your eye make a comparison with the angle that the roller has with what the direction of the shaft is.

The Court: Like this?

The Witness: No, it apparently can't correct.

Mr. Mueller: Will you talk as loud as you can?

Mr. White: I suggest that you speed it up better than that. You can stop it with a stroboscope, synchronize the speed of your scope.

(The witness demonstrated.)

The Witness: Well, you can see it fairly well there.

The Court: I can see a slight slant.

(Testimony of M. F. Spotts.)

The Witness: You can see a little slant.

The Court: Each juror would have to view it.

Mr. White: I have no objection, but I do know as matter of scientific fact that by a stroboscope that can be brought to an absolute standstill so that the slant can be observed without observing any motion at all, and as a matter of demonstration, a thing moving at that speed, it is pretty hard to judge. [229]

The Court: It is very difficult; you have to watch it for a while.

Mr. White: If the professor would experiment a little bit he can synchronize it so that he can stop it.

The Witness: That is about as good as we can get this thing.

The Court: I beg your pardon?

The Witness: This instrument is in good condition, too.

The Court: I haven't any objection if you want this to be demonstrated to the jury, but I can see each one would have to come up here and look at it.

Mr. Mueller: Yes, Your Honor. You could see that the rollers stayed skewed; is that correct?

The Witness: That is the best I can do.

The Court: I think we had better defer that until the morning and do it in the morning. Then we will draw lots and we will see who the jurors are who are going to be the most fortunate to see it first, you see. I think that would take a little time for each one to go and look at it and it is getting a little

(Testimony of M. F. Spotts.)

late today. I think we will do that the first thing in the morning. You might get it in shape so that it will work out.

Mr. Mueller: Yes, Your Honor, we will. [230]

* * * * *

Q. (By Mr. Mueller): Dr. Spotts, before beginning the demonstration, will you please tell us about the Stroboscope, Defendant's Exhibit T-1. There is some question as to the operation of that yesterday afternoon. Mr. White raised the question. Can you tell us whether that is a new Stroboscope?

A. It is a new instrument. The makers, General Radio Corporation, have an excellent reputation for producing high-grade and accurate equipment. The instrument is brand new. I took it out of the original packing case myself.

Q. Have you operated previously to yesterday this particular Stroboscope, Defendant's Exhibit T-1, and did you find it operating satisfactorily as a Stroboscope? A. Yes, I did.

Q. Over what period of time, Dr. Spotts, have you actually used a General Radio Corporation Stroboscope such as Defendant's Exhibit T-1 in connection with your teaching work? [235]

A. I would say at least five years.

Q. And again, before beginning the demonstration, would you say that that which could be seen yesterday afternoon when the Stroboscope was on and the model, Defendant's Exhibit T, was operating, was that representative of a true test operation

(Testimony of M. F. Spotts.)

of that board, using the Stroboscope, Defendant's T-1? A. Yes, I would.

Q. That was representative of a normal operation with a Stroboscope?

A. That is correct.

The Court: You will pardon me, but putting this in plain, everyday, simple language so the jury and the judge can understand it, what the witness is going to do is to show the appearance of these bearings in operation, to demonstrate what this process of skewing looks like; is that it in a nutshell?

Mr. Mueller: That is it.

The Court: Go ahead and show it. I guess the only way we can do this is to have the jurors look at it one at a time.

Mr. Mueller: Yes. We have identified it on the record, but I might just ask him to explain what the bearings themselves are so the jury will understand what they are looking at.

Q. Will you please refer now to the tags? We have marked the two bearing mountings as identified in Defendant's Exhibit [236] T-3 for identification.

A. I might first ask him to explain what the bearings themselves are so the jury will understand what they are looking at.

Q. (By Mr. Mueller): Will you refer now to the tags? We have marked the two bearing mountings as identified in Defendant's Exhibit T-3 for identification.

(Testimony of M. F. Spotts.)

A. The bearing in the plate is a standard Guiderol type of bearing. In Defendant's Exhibit 2 for identification the bearing is made specially. There is no Guiderol bearing in common manufacture with the guide roll on the inner race, so we had to make the race specially for demonstration purposes. The rollers are standard rollers as is used in the other bearing. This is standard, out of stock.

Q. Will you identify what you mean by "this one," please?

A. The T-3. The T-3 bearing is standard out of stock and the rollers in the T-2 standard are the regular rollers as would be used in the one in T-3. we had to make that specially because there aren't any standard parts that we can use for that.

Q. Dr. Spotts, you said standard, but I call your attention to the fact that there is an opening in each of the bearings marked for identification T-3 and T-2.

The Court: He explained that, counsel.

Q. (By Mr. Mueller): That is for the purpose of viewing the [237] roller? A. Yes.

Q. To that extent they are not standard. I just wanted that clear.

A. Yes. I explained.

The Court: Are you ready to show that to the jury now? Suppose we start with the first row.

(Thereupon the jurors in turn left the jury box and approached the device, Defendant's Exhibit T, and viewed the demonstration. Dur-

(Testimony of M. F. Spotts.)

ing the demonstration the following comments were made:)

The Court: You will have to tell him where to look.

The Witness: Notice the angle.

The Court: I think you have to squat a little bit to look at it; isn't that right, Doctor? In order to view it, you have to squat down.

The Witness: Yes, sight over the instrument and try to make a comparison of the position of the roller with the direction of the shaft.

Mr. White: May the record show that the rollers on the left are hardly visible under this Stroboscope examination in the comparison of the two, and I would also like to ask the Court to admonish the witness not to discuss this matter with the jurors while they are looking at it, it being suggestive of what they are supposed to see. Let each juror see what he [238] or she sees.

The Court: All right.

Mr. White: Let the record show the juror stated that looking at the left he can't see anything.

Mr. Mueller: If your Honor please, may I just interrogate Dr. Spotts a moment so there is no question as to what they are looking for?

Q. Dr. Spotts, is it a fact that any position of the rollers in either test unit, T-2 or T-3 for identification, any position of a roller out of parallelism with the shaft represents a skewed roller; is that correct? A. That is correct.

Q. Unless the rollers are perfectly parallel with

(Testimony of M. F. Spotts.)

the shaft of the bearing about which they are rolling, then those rollers are out of alignment or skewed. A. That is correct.

Q. And that might be a great or a small amount?

A. That is correct.

(The demonstration was thereupon completed.)

Q. Dr. Spotts, will you please take the wooden model, Defendant's Exhibit S, and roller S-1, and very quickly just again show skewing on the roller and what constitutes skewing, whether it is a great or a small degree, very quickly, and please state what you are doing.

A. On the roller, Defendant's Exhibit S-1, and the raceway, [239] Defendant's Exhibit S, we have the roller and a section of the outer race. Skewing is operation of the bearing when the roller is tipped at a small angle with respect to the axis of the race: straight (demonstrating); skewed (demonstrating).

Q. And skewing of the roller, Dr. Spotts, as it is used in this testimony, could be any degree of misalignment between the roller and the axis of the roller such as would be represented in an axis, Defendant's Exhibit S?

A. Yes, there are different degrees of skewing.

The Court: You said yesterday it was not particularly important, this skewing, that that always occurs.

A. To some extent it always does, but the amount might be important with relation to the amount of

(Testimony of M. F. Spotts.)

load you are trying to put on a particular bearing.

Q. Of course, with the track there, there is a limit to the amount of skewing, isn't there?

A. Definitely so.

Q. With the track there, the amount of skewing that would occur with the track, I finderstood you to say, would not be particularly bothersome.

A. The skewing would be limited by the confinement of the rollers, an individual roller with the surrounding bodies.

Q. Just listen to my question, which is just plain language. You have a track there. [240]

A. Yes.

Q. You have rollers running over it.

A. Yes.

Q. It is not altogether different from a railroad train except there is a flange on both sides of this wheel, if that is a wheel. A. Yes.

Q. The amount of skewing that is going to take place is limited by the presence of that rail there, isn't it? There can only be a certain degree of skewing.

A. Yes, it is limited by the rail.

Q. Is the amount of skewing that is limited by the rail, to the extent that is limited by the rail, of any consequence? That is what I want to know.

A. Yes, it is.

Q. I thought you said it was not. You said it did not amount to anything, that it was not of any great concern, because there was always this amount of skewing that would take place.

(Testimony of M. F. Spotts.)

A. The amount of the skewing is important with relation to the other factors in the operation of the bearing.

Q. You got a roller and it is going on a track. At what point is it that the skewing becomes of any importance, or is there such a point? That is putting it to you in our everyday language. Can you answer that? [241]

A. I can answer it only when we think of the load that that bearing might be carrying.

Q. What you are saying, then, is that depending upon the use to which it is put depends the extent to which these rollers can skew and be of little importance, is that right?

A. That is so. My remark yesterday was referring to this particular test board here, when we said the amount of skewing was not important.

Q. In a device of this kind, with the track, is there any point and any use to which the bearings are put where it does become important that, within the limits fixed and the boundaries fixed by the track, skewing becomes of importance?

A. Yes, I would say there was.

Q. What does that depend upon? That is a practical matter, isn't it?

A. Yes, it depends on how big the load is. If the load is little, you can have more skewing than if you would have a very heavy load on the bearing.

Mr. Mueller: May I just make one remark, your Honor?

Q. Dr. Spotts, the matter of skewing must also

(Testimony of M. F. Spotts.)

be taken into consideration with respect to an outer race and the inner race confining the roller, is that correct, as well as the Guiderol on one race?

A. Most certainly.

The Court: What does that mean? [242]

A. That mean——

Q. That is only the place where the roller is confined?

A. Yes, and the confinement, the degree of confinement, in all respects, the guide roll as well as the other bodies, races and the adjoining rollers, confines the roller to the final position.

Q. It would get off the track if there was not something to confine it? A. Yes.

Q. That is it in simple language?

A. Yes, it is.

Q. All you are saying there that is important is if you did not have the rollers confined within a space, they would go off the track?

A. Yes, sir.

Q. That is all that means?

A. Yes, your Honor.

Q. This is not very much different from a railroad train running on a track, is it?

A. It has some qualities of resemblance.

Q. If you had a railroad train running on a track, and you had on top of the train a cover that covered the railroad train so it would not jump up, you would have a similar arrangement, wouldn't you? A. There are some points of similarity.

Q. It would be practically the same. I know that

(Testimony of M. F. Spotts.)

experts never want to answer you directly, but there is not much difference, for practical purposes, is there? There is nothing extraordinary about the idea of something running on a track and being confined to that area? A. Not at all.

Q. So it does not get off the track?

A. Yes.

Q. And that is all this is?

A. That is exactly what it is.

Q. Apparently, though, from your testimony there have been men working on this, according to what you say, since back in 1906 when the Englishman had been working on it, so it must have been a problem right along. A. It worried them.

Q. It must have been a problem.

A. Yes, it was a problem.

Q. Because you yourself have said that this patent that the Englishman made has practically the same means and devices of the Stallman patent.

A. Yes.

Q. So going back that far they were working on it? A. Yes, your Honor. [244]

The Court: I hope I haven't confused you gentlemen too much, and I don't mean to be critical, but it doesn't do any good for patent lawyers to try a case before a jury for the sake of the record. The jury has to understand it in some simple language.

Q. (By Mr. Mueller): Referring to the bearings marked for identification Defendant's Exhibit T-2 and T-3, did those bearings operate and con-

(Testimony of M. F. Spotts.)

tinue to roll in the test equipment while the test equipment was operating? A. They did so.

Q. And is it your position from observing those rollers while they were operating and viewing it with a Stroboscope that they stayed skewed while the bearings were rotating, Dr. Spotts?

A. Yes, they did.

Q. The fact that there is an opening on each end of the races of the bearings marked for identication T-2 and T-3—would the fact of those openings in and of themselves cause the rollers to skew in those bearings while the test equipment was operating?

A. No, sir, that would not be because of the skewing. [245]

* * * * *

Q. Dr. Spotts, was there a load applied to each of the bearings, Defendant's Exhibits T-2 and T-3 while this test equipment was operating? And will you tell us what that load means so that the jury can understand it?

A. There was a load applied to the bearings. The load came from the two belts, the tension in each of the strands of the belt. The loads were applied from the belt at a small angle to the pulley which was tending to bring the two races out of parallelism with each other.

Q. That is the two races on each of the bearings, T-2 and T-3, were forced out of parallelism to simulate skewing?

A. Yes, the bearing T-2 and also in T-3 was

(Testimony of M. F. Spotts.)

twisted around by the fact that the belt pulls and did not come in squarely with the bearing.

Q. And that misalignment between the outer race and the inner race of each bearing T-2 and T-3 is the misalignment that we are talking about when we refer to any of these guide roll bearings in suit? A. That is the misalignment.

Q. And that is the misalignment we are talking about with respect to the prior art—misalignment between each of the raceways or race rings of the bearing containing rollers in between.

A. Yes, it is the lack of parallelism between the two races. [246]

Q. Referring to the prior art, to the Zahn British patent 17841 on the blackboard—or on the easel, I am sorry—so far as affecting roller skewing is concerned, how does the two guide rail structure in the bearing of Fig. 6 operate with respect to skewing?

A. The bearing in Figure 6 of the Zahn British patent——

Q. Dr. Spotts, you might take Figure 4 first and show what two guide rails mean there, if you will, please.

A. In Figure 4 of the Zahn British patent there is a guide rail (g) attached to the rotating shaft. There is one on the left and there is another one on the right, and these guide rails extend up into the recessed portion in the rollers. Then when there is skewing the——

(Testimony of M. F. Spotts.)

Q. And that skewing would be in the roller (a) in Figure 4, Dr. Spotts?

A. A skewing in the roller (a) with respect to shaft (b) and the outer ring (c). That skewing will eventually bring the roller into contact with guide rail (g); it will touch at one side or the other, the shoulder of the recess contacting the rail (g).

Q. Referring to Fig. 6, that of course is a broken away section. Is that a common way of showing a broken away section in drawings?

A. That is common engineering practice.

Q. And can you say, Dr. Spotts, from reading [247] the British patent that there would be two guide rails if that was merely illustrated in full? I am referring to Figure 6.

A. If Figufe 6 would be completed and the broken away parts shown in the drawing, there would be a guide rail (g) on each end of the roller.

Q. And that guide rail (g) will you please state where that is?

A. It is located—the guide rail (g) in Figure 6 of the British drawing is located and attached permanently to the outer race (c) by means of screw (t).

Q. And the roller (a) is the load carrying roller in Figure 6?

A. Yes, load carrying roll (a), in Firgue 6, carries the load that is placed upon the bearing.

Q. Referring to the Kempster patent 585,580 on the easel, will you please refer to Figure 2 of that? Will you please state what happens in case

(Testimony of M. F. Spotts.)

of misalignment between the races in the bearing of Fig. 2, and just simply show that which would happen in that bearing.

A. In Fig. 2 of the Kempster patent misalignment means that the shaft becomes tipped, would become tipped slightly to the outer race. Shaft 8 becomes tipped slightly to the outer race 2. In that case the roller 6 will be carried into a position of misalignment or its axis will assume a position not parallel to either of the races. [248]

Q. And would the roller 6 and the other roller corresponding to 6 as in Fig. 1—would those skew if there was misalignment between the outer race and the inner race represented in the journal 8?

A. Yes, those rollers will skew.

Q. And would they be limited by the combination of the inner raceway on the journal 8 and the outer raceway within the outer race ring as well as the guide rail?

A. Yes, they would be confined by the bodies you mentioned, the inner race ring and outer race 2 and the guide rail 4.

* * * * *

Q. (By Mr. Mueller): Dr. Spotts, will you please look at this model marked for identification Defendant's Exhibit U and tell us what it is.

A. Defendant's Exhibit U for identification is a scale model of the bearing shown in Kempster patent 585580.

Q. And what figure on the Kempster patent does that model compare to?

(Testimony of M. F. Spotts.)

A. It would compare with Figure 1 and Figure 2 of the Kempster patent. [249]

Q. But the model marked for identification Defendant's Exhibit U does not have a shaft in it; is that correct, Dr. Spotts?

A. No, it does not have the shaft. The shaft is missing. I am sorry; I forgot that. No shaft is present in the one I hold in my hand.

Mr. Mueller: Your Honor, this is a model merely to illustrate, with a plastic exterior construction such as that in Figs. 1 and 2. May that be handed to the jury by the bailiff merely to examine?

The Court: Can't they see it if he just holds it up? It is big enough, isn't it?

Mr. Mueller: Whatever you say, sir.

The Court: They can see it from there, I take it.

Q. (By Mr. Mueller): Dr. Spotts, in the Kempster patent 585580 if the bearing such as that in the model which you hold in your hand and the shaft 8 are separated, will the rollers in the bearing remain in the outer housing?

A. Yes, the rolls stay in the outer housing.

Q. What accomplishes that?

A. The rollers are held pressed outward. The rollers are held in the outer housing by means of spring number No. 10, which is shown in detail in Figure 9 and Figure 10. Then in the assembly of the bearing it is item 10 and Figure 10, and 10 in Figure 2. [250]

Q. And that bearing such as the model marked for identification Defendant's Exhibit U can be

(Testimony of M. F. Spotts.)

transported in that form without the rollers falling out? A. Oh, yes, it could be shipped.

* * * * *

Q. (By Mr. Mueller): Dr. Spotts, will you please identify that chart? Will you please tell what the chart marked for identification Defendant's Exhibit V is?

A. Defendant's Exhibit V represents a reproduction of Figure 2 of the Kempster patent 585580. In fact, it is similar to the Figure 2 of the adjoining chart only on a larger scale.

Q. And at the top have you compared that claim with claim 9 of the Stallman patent 2,334,227?

A. Yes, I have, with claim 9 of the Stallman patent.

* * * * *

Q. (By Mr. Mueller): Dr. Spotts, I am going to give you the substance of claim 9 of the Stallman patent in suit and will ask you as we take each element to apply it to prior art if you do or do not find it there.

"A bearing comprising a cylindrical inner race"——

A. The cylindrical inner race in Figure 2 of the Kempster patent is composed of the shaft shown dashed, body No. 8.

Q. "—an outer race in the bearing."

A. The outer race is element No. 2.

Q. On the outer race itself, Dr. Spotts, is that the inside surface of element No. 2?

(Testimony of M. F. Spotts.)

A. Yes, the inside surface is marked 3 on the Figure 2.

Q. And 2 is the outer race ring of the bearing?

A. 2 is the outer shell itself.

Q. "—a plurality of rolls having reduced portions intermediate their ends interposed between the races." Will you please point that out?

A. There is a plurality of rolls, element 6, and [252] they are located between the outer race 2 and the inner race 8.

Q. "—a ring carried by the outer race registering within the reduced portions of the rolls to engage the rolls if they become misaligned." Will you point out that structure?

A. There is such a ring attached to the outer race. That is element No. 4, and it is integral with that race and it registers in the reduced portions of the rolls, 6.

Q. "—a second ring in the reduced portions of the rollers adjacent the inner race to retain the rollers in place against the outer race when the inner race and the outer race are separated."

A. There is such an inner ring. It is element No. 10 shown in cross section of Figure 2.

Q. Referring to the elements on the full chart of the Kempster patent, elements 9 in Figures 7 and 8, will you please tell what they are?

A. Element 9 at the bottom in Figures 7 and 8 is called a separating disc, and this is used in the assembly to keep the main load carrying rollers separated from each other. It fits into the groove

(Testimony of M. F. Spotts.)

that is placed in the main load carrying roller 6 and serves the purpose mentioned.

Q. Would the roller of the Kempster patent in Figs. 1 and 2 operate if those separator discs were removed? A. Yes, it would operate.

Q. And according to the dimensions as shown in the drawing? [253] A. Yes.

Q. We will take claim 5 of the Stallman patent in suit and taking the substance again I will read it to you and will ask if you can find it in the prior art.

Mr. Mueller: And, your Honor, this is prior art not cited by the Patent Office, both Kempster and Zahn, in the brown folder.

The Court: What are you referring to now? Which one?

Mr. Mueller: Zahn 17841.

Q. "Claim 5. A bearing comprising a revolving race and a relatively stationary race, and a plurality of rollers interposed between the races and those rollers having reduced portions intermediate to their ends." Do you find that in the prior art?

A. In the British Zahn patent there are such elements. There are inner races (b).

Q. (By the Court): Are you now using Exhibit Q? Is that Exhibit Q?

A. This is Q. There are outer races, element (c), which appears in Figure 2, Figure 4 and Figure 6. There are load carrying rollers (a) in Figure 2, Figure 4 and Figure 6. These rollers have

(Testimony of M. F. Spotts.)

reduced portions intermediate their ends in the three figures previously mentioned.

Q. (By Mr. Mueller): Now, I will read the remainder of claim 5, and do you find it in the prior art: [254]

> "—and means carried by the stationary race only and projecting only into the reduced portion of the rolls to engage shoulders formed by the reduced portions of the rollers in the event of misalignment of the rollers."

Now, do you find a means in the British 17841 structure which has that function, it is carried on a stationary race only and projects into the reduced portions of the rollers?

A. It would refer to Figure 6, because in this case race (c) is stationary and the guide rail means or ring (g) is attached to the stationary race permanently by the screws (t) and this guide rail projects into those reduced portions that appear in the load carrying roll (a).

Q. Does the projection of the rail (g) into the reduced portions in the rollers (a) have any effect on the rollers if there is misalignment of them in the bearing?

A. Yes, they would come into contact with the rollers in case the rollers would skew.

Q. Now, referring to claim 3 of the patent in suit, Stallman patent 2,334,227, I will read the substance of that claim and I will ask you if you find that in the prior art:

(Testimony of M. F. Spotts.)

"A bearing comprising a rotatable inner race and a relatively stationary outer race."

A. I find a rotatable inner race (b) in Figure 6 of the Zahn British patent, and a relatively stationary outer race (c) in the same figure. [255]

Q. That is Zahn British patent 17841, is that correct?

A. It is.

Q. Do you find in the prior art, "rollers interposed between the two races and having aligned reduced portions intermediate their ends"?

A. Yes, in the same Figure 6 of the British Zahn patent there are such rollers (a) and they have reduced portions (g) intermediate their ends.

Q. Continuing with claim 3:

"A ring carried by the outer race and projecting into the reduced portions of the rollers to prevent their longitudinal movement."

Do you find that?

A. Yes, in Figure 6 of the British Zahn patent I find ring (g) attached to the stationary race (c) by means of screws (t).

Q. And concluding with claim 3:

"A second ring registering with and permanently contained within the reduced portions of the rollers to hold the rollers in position in the outer race when the inner race is removed."

Do you find that, Dr. Spotts?

A. I find such a ring in Kempster patent 585580. It is element No. 10. It is shown in Figure 1 and in Figure 2 and in Figure 3 and is shown in detail in Figures 9 and 10.

(Testimony of M. F. Spotts.)

Q. Is there any other patent in the prior art [256] in the answer which shows such a ring with that function, to which you can point, Dr. Spotts?

A. There are a number of such rings shown in the prior art. I could name a couple.

Q. Do you have the prior art patents with you?

A. Not all, no.

Q. Will you please look at Rydbeck patent 1979707 which is in the Defendant's Exhibit, the arts cited by the Patent Office in the green cover? Do you have that? A. I have Rydbeck.

Q. Will you hold that up and explain the ring having the function which I read to you, if you find it there?

A. In this Rydbeck 1,979,707, there is such a ring. It is shown in detail in Figures 3, 4 and 5, and then in the assembly of the complete bearing it is marked as element No. 6 in Figure 2. It registers with the reduced portion of the rolls.

Q. Referring, Dr. Spotts, to the chart of the Stallman patent 2334227, is there such a retaining spring in the bearings there illustrated, and will you please point it out?

A. Yes, in the Stallman patent Figure 1, ring No. 16 is such a ring. 16 appears in Figure 1, 16 appears in Figure 2, also in Figure 4. In Figure 5 there are such rings, No. 22.

Q. After the bearing of the Stallman patent is installed in a machine, do those rings which you [257] have just identified have any function?

A. No, they do not.

(Testimony of M. F. Spotts.)

Q. They are there solely for the purpose of holding the rollers in the bearing while it is being transported; is that correct, Dr. Spotts?

A. If it should be transported with the inner race removed, they hold the bearings in place.

Q. In the Stallman patent 2,334,227, actually Figures 1, 2, 3, 4 and 5 each have an inner ring.

A. That is correct.

Q. So that they do not need, as they are illustrated, a spring for holding the rollers in the outer race; is that correct? A. I lost the sense.

Q. As the ring is illustrated in Figs. 1, 2, 3, 4 and 5, that spring, the retaining spring, has no function when the inner ring is assembled with the outer race? A. No, sir, it does not.

Mr. Mueller: I would like to take claim 4 in substance from the Stallman patent and that concludes claim 3, 4, 5 and 9 which are charged to infringe, your Honor. Now, I will shorten this up and do it differently, Dr. Spotts, if I may. Referring to Figure 6 of the British patent 17841 on the easel, will you kindly tell us whether there is a revolving race in that bearing and identify it if there is? [258]

A. In Figure 6 of the British Zahn patent shaft (b) constitutes the inner race.

Q. Are there a plurality of rolls or rollers in the bearing of Fig. 6 which are interposed between the races (b) and (c) of that bearing?

A. There is such a plurality of rolls; it is marked element (a) in Figure 6.

(Testimony of M. F. Spotts.)

Q. Is it proper to consider Fig. 6 as having a plurality of rollers, Dr. Spotts?

A. Yes, it is. It is common engineering practice in a cross section of this kind to assume that there would be more than the single roller that is shown here at the top.

Q. And Figure 3—can you explain whether that shows the plurality of rollers?

A. In Figure 3, yes, we have a cross section transverse to the bearing and roller (a) appears all the way around the circumference.

Q. Referring again to Figure 6 of the British patent 17841, can you find and identify a structure that is carried by the stationary race only of that bearing and with that structure engageable with the rollers in the bearing intermediate the ends of the rollers?

A. In Figure 6 in stationary outer race (c), there is a guide rail (g) permanently attached to the race (c) by the screws (t), and this guide rail [259] extends down into and registers with reduced portions in the load carrying rollers (a).

Q. What is the function of the rail (g) in Fig. 6 with reference to the concluding phrase of claim 4 that the means engages the rollers in the event they become misaligned with their normal position?

A. The function of ring (g) in Figure 6 is to make contact with the shoulder of the recess in the roller (a) and to stop its longitudinal motion and assist in limiting the amount of skewing.

Q. Will the structure of the Heim patent

(Testimony of M. F. Spotts.)

1885914 on the reproduction of that drawing that I have just placed upon the easel — would that structure limit the misalignment or skewing of a roller in the bearing if misalignment occurred during operation of the bearing?

A. Yes, this structure would eliminate such misalignment in the Heim patent.

Q. Will you identify the structure that would be involved in the operation and the end result, please?

A. The rolls 15 have a reduced portion intermediate their ends. These rolls register with the guide ring 16. That appears in Figure 3, also in Figure 1 and Figure 4 and Figure 5. If the roller skews and moves endwise, the shoulder of the recess will come into contact with the guide rings and will thereby be limited in its motion.

Q. That limitation is also related and also must [260] be considered with reference to the confinement of the roller between the outer race ring and the inner raceway? A. That is correct.

Q. And does such confinement show in Figure 1 of the Heim patent? Are the rollers there shown as confined between races?

A. Yes, the rollers are confined between the inner race 17, which is the shaft, and the outer race 12.

Q. Now, considering the guiding effect of the rail in the bearing of Heim 1885914, if the rollers skew in that bearing, comparing that with the guiding effect of a rail in the bearing of the Stallman

(Testimony of M. F. Spotts.)

patent 2334227, is the guiding effect of the rails in each patent generally the same?

A. Yes, it would generally be the same. [261]

* * * * *

Q. Dr. Spotts, will you please refer to the chart marked for identification Defendants' Exhibit W and I will take you through that chart to save time, Dr. Spotts, if I may. Referring to Figure 1, which [262] is marked Figure A on the chart, have you compared that with Figure 1 of the Heim patent 1885914, and can you say that it is a photostatic reproduction of Fig. 1 of the Heim patent?

A. Figure A of Defendant's——

The Court: Yes or no. I just want to shorten it. Is the answer yes?

The Witness: The answer is yes with the exception of two notations which have been placed on the chart here.

Q. (By Mr. Mueller): And those notations are merely for illustration? A. Yes, sir.

Q. Taking Figure C of the chart, is that a reproduction of Figure 3 in Heim 1885914?

A. Yes, it is.

Q. Taki - Figure F in the chart——

The Court: Can't you make one question to cover it? All these are reproductions?

Mr. Mueller: They are not.

The Court: Very well.

Mr. Mueller: That is why I am doing it in this way.

Q. Taking Figure F, except for the rotating

(Testimony of M. F. Spotts.)

housing and fixed shafts, is that figure a reprodution of Figure 2 of the Kempster patent 585580?

A. It is, with the exceptions you mentioned.

Q. Taking the figure in the center, Figure D, [263] have you prepared that illustration with an actual guide roll bearing such as sold by the defendant, and is that a fair representation of a guide roll bearing?

A. It is a fair representation of a cross section through a guide roll bearing.

Q. Referring to Figure B at the left hand corner of the chart, will you please look first at the bearing represented by the rollers and will you give me the number, please?

A. The rollers in No. 14 in Figure B.

Q. The rollers 14 and the outer race rolls at guide roll 16, have you compared those?

A. The rollers are No. 14 in Figure B.

Q. The rollers, 14 and the outer race 12, and the guide roll 16; have you compared those with Fig. 1 of the Heim patent and are those accurate illustrations of the bearings in Figs. 1 and 3 of the Heim patent 1885914?

A. I would say that Figure B was, these parts of Figure B were.

Q. Referring to Figure B on the chart, Defendant's Exhibit W, is that an illustrative mechanism shown there and identified as a fixed housing, a rotating shaft and rotating wheels? Are those representative illustrations of such elements, Mr.—Dr. Spotts?—referring to Figure B?

(Testimony of M. F. Spotts.)

A. Yes, they are.

Q. And are they representative for the purposes [264] of illustration of the members 10 and 19 in the Figure A of that chart as well as the shaft 17?

A. Yes, 10 and 19 are representative.

Q. They are representative of the structure above in Figure A? A. They are.

Q. Does the structure in Figure B on the chart simulate or represent rotating wheels and a rotating shaft and a fixed housing? A. Yes, it does.

Q. Referring to Figure A, as the Heim structure is illustrated there, do you have a rotating housing? A. We do.

Q. And a fixed shaft?

A. Yes, that shaft is fixed in this Figure A.

Q. And the mounting?

A. The mounting members, 19.

Q. They could correspond for illustrative purposes with the members 19 below?

A. They could.

Q. Will you take Figure E on the chart marked for identification Defendant's Exhibit W? Is that bearing illustrated in Figure E an accurate illustration of the bearing in Figure F of the chart?

A. It is accurate with one exception. In F there [265] is no shaft shown dotted as element 8.

Q. That is, there is the shaft in Figure F and no shaft in Figure E? A. Yes, that is so.

Q. But the bearing as illustrated in Figure E, does that correspond to the bearing reproduced in Figure F of the chart? A. Yes, it does.

(Testimony of M. F. Spotts.)

Q. Referring to the righthand figure identified as (g), is the bearing in the center part of that illustration an accurate illustration of the bearing in Figure F of the chart? A. Yes, it is.

Q. And does the bearing—and you are referring, Dr. Spotts, with your pointer to the mechanism that includes the roller 6—does that roller in Figure (g) correspond to the bearing in Figure (e) of the chart?

A. Yes, the bearing itself does.

Q. In Figure (g) of the chart, is there a fixed housing and a rotating wheel and a rotating shaft shown with the bearing?

A. There is a Figure (g).

Q. And that mechanism in Figure (g) of the chart, is that an illustrative mechanism to show a bearing such as the bearing in the Kempster patent shown in Figure (f)? A. It is.

Q. Dr. Spotts, referring to Figures (c), (g) and [266] (e) on the chart, are those each illustrative of the bearings as they would be sold in the normal course of business? A. They are.

Q. Do they each include an outer housing?

A. They do.

Q. Rollers within the outer ring or housing?

A. They have rollers.

Q. And in each of the Figures (c), (d) and (e), is there a guide rail shown extending into recesses in the rollers?

A. There is a guide rail in each of the Figures (c), (d) and (e).

(Testimony of M. F. Spotts.)

Q. As those bearings are illustrative in Figures (c), (d) and (e) it is not possible to tell whether the bearing is a stationary installation or a rotating installation; is that correct, Dr. Spotts?

A. I can not tell in Figures (c), (d) and (e) whether the outer race rotates or whether it would be fixed.

Q. Is that just a bearing with no consideration of movement? A. That is so.

Q. Referring to the bearing and the mechanism of Figure (a) and the mechanism and the bearing in Figure (b) of the chart, Defendant's Exhibit W, in your opinion, is there any difference in the bearing operation in the difference structures illustrated, the different installations illustrated in Figures (a) and (b)? [267] A. No——

* * * * *

Q. (By Mr. Mueller): Referring to Figures (a) and (b) in the chart, Dr. Spotts, would you expect a guiding effect for the bearing in Figure (a) with a outer, rotating housing that compares with the guiding effect of the bearing in (b) with a fixed outer housing for the bearing?

A. I would.

Q. You would expect that the guiding effect could be generally the same in the two installations, Figures (a) and (b)?

A. That is what I would except.

Q. Referring to Figures (f) and (g), and in Figure (f) we have illustrated a rotating outer race ring and in Figure (g) the outer race ring, too, is

(Testimony of M. F. Spotts.)

[268] fixed; would you expect to have the same general guiding effect from the guide rail in each of those two bearings, in (f) and (g) of the chart marked for identification, Defendant's Exhibit W?

A. I would.

Q. And in the Figure (f), the shaft constit ing the inner race is a fixed shaft, is that correct?

A. That is correct.

Q. That is the way it is illustrated?

A. That is correct. [269]

Q. And in Fig. G the shaft is illustrated as rotating? A. That is correct.

Q. Referring to the illustration of a bearing such as the defendant's Guiderol bearing in Figure B of the chart, from your experience with such bearings would you expect that there would be a guiding effect in that bearing, that is, a guiding effect on the rollers of defendant's bearing, whether the outer race ring is fixed or is rotating?

A. I would expect to find no difference.

The Court: What was the answer?

The Witness: I would expect to find no difference.

Q. (By the Court): You mean the guiding effect of the structure would be approximately the same?

A. Yes. [270]

* * * * *

Q. Dr. Spotts, I hand you two models marked for identification Defendant's Exhibits Y and Y-1, merely because they are identical, and they are

(Testimony of M. F. Spotts.)

shown to you as illustrative of a bearing in accordance with Fig. 5 of the Heim patent. Have you examined those two models, Dr. Spotts, and what can you tell us about those? [271]

A. I have examined the two models and compared them visually with Figure 5 of the Heim patent and they appear to be very good embodiments of this figure.

Mr. Mueller: They are merely plastic housings, your Honor, merely to show the containment of rollers in a housing such as Fig. 5 of Heim. We are not going to operate them. As you will note, there is no volt figure of any of the bearings in the Heim patent 1885914.

Mr. White: This witness testified that he compared them visually. If he puts his finger it in, your Honor, he finds out that the purported copy of the Stallman bearing does not rotate, or it is very difficult to rotate, but the Heim bearing rotates very nice and easily, so he reversed the clearances in the different patents, and that is a fake.

Mr. Mueller: Now, your Honor, that is a strong charge, which I deny and resent. That is completely improper. You can see very easily yourself that that is merely an illustration of Figure 5.

The Court: I can't see it but maybe the witness can testify to it. I assume that is what it is.

Mr. Mueller: It is a plastic housing, and the roller 27, of course, is transparent. It was merely to help visualize a structure which we have tried to do.

(Testimony of M. F. Spotts.)

The Court: Counsel can cross examine on it. He can testify to what it is. He has already done that. [272] He has already stated that that is a graphic representation of his view as to what that Figure 5 of the Heim patent discloses.

Mr. Mueller: Just as rollers and outer housing and inner retaining ring, your Honor.

The Court: That is right.

Mr. Mueller: These two models are exactly the same character and they have been marked for identification as Defendant's Exhibit X and X-1 because they are identical.

Q. Dr. Spotts, will you state what they are from the standpoint solely of graphic illustrations?

Mr. White: May I interrupt, your Honor, at this time? Counsel has stated that this was merely a representation of the housing, rollers, and the inner retaining ring. Do we understand that those are not representations of the guide rail and the track?

Mr. Mueller: There is a guide rail in the outer race ring, Mr. White, of Figure 5.

Mr. White: I say, are these also correct representations of the guide rail?

Mr. Mueller: They are graphic illustrations of the guide rail 27 in Figure 5 of the Heim patent, that is correct.

The Witness: Yes, all the parts in the model agree with the drawing.

Q. (By Mr. Mueller): From a graphic, illustration standpoint? A. Yes, sir. [273]

(Testimony of M. F. Spotts.)

Q. Will you state what those models that you have in your hand are as graphic illustrations in plastic housings?

A. Those exhibits for identification X and X-1 represent graphic models of Figure 1 of the Stallman patent. The outer housing or race has been made out of plastic in this case so that we can see the construction better.

Q. Both of the models, Dr. Spotts, are merely transparent, visual models to show the inside construction of the Stallman and the Heim bearings, is that correct? A. That is correct.

Q. You cannot see the internal construction through a steel or metal race ring, is that correct?

A. That is correct.

Q. Would you say that the two models marked for identification Defendant's Exhibit X and X-1 are from that standpoint visual illustrations of a bearing according to the Stallman patent?

A. I would. [274]

* * * * *

Q. Dr. Spotts, were any of the four models, Defendant's Exhibits X, X-1, Y and Y-1, offered for the purpose of operation of the bearings?

* * * * *

Q. (By Mr. Mueller): There is no operation that was intended by those, is that correct, Dr. Spotts? A. That is correct.

Q. And they were not intended to illustrate an operation of either bearing such as we have been discussing during your testimony?

(Testimony of M. F. Spotts.)

A. No, they were not.

Q. Dr. Spotts, referring to the chart of the British Zahn patent 174841, are the elements F in Figures 2, 4 and 6 spacing rollers?

A. They are. [276]

Q. What is the function of the spacing rollers (f) in Figs. 2, 4 and 6 of the Zahn British patent?

A. The spacing rollers (f) of the Zahn British patent have the function of keeping the loaded area of rollers (a) separated from each other so they don't touch on the side.

Q. Would the bearing according to Figs. 2, 4 and 6 of the Zahn British patent operate if the spacing rollers were removed?

A. It would, providing you would fill up the space with some additional load carrying rollers (a).

Q. And if the spaces were filled up, then would a bearing according to the Zahn British patent operate to effect skewing of the rollers with or without the spacing rollers (f)?

A. A study of the drawing leads me to say that it would.

* * * * *

Q. Dr. Spotts, if you put a guide rail on both the inner race and the outer race of a roller bearing, will that bearing operate satisfactorily?

A. Yes.

Q. A guide rail fitting into the recess in the roller on both the inner and outer raceways?

A. Yes.

(Testimony of M. F. Spotts.)

Q. And that is in contrast to a single guide rail as 4 in the Kempster patent Fig. 2? [277]

A. Yes, it is. [278]

* * * * *

Cross Examination

Q. (By Mr. White): Doctor, you have before you these exhibits X and Y, I believe are the numbers. A. Yes, sir.

Q. And the Exhibit X—try to turn those bearings on the inside.

* * * * *

A. I can turn them quite readily, Mr. White.

Q. (By Mr. White): I am handing you Plaintiff's Exhibit 5-A. Try to turn that.

A. Yes, I can turn these rollers, too.

Q. Which is easier to turn?

A. The 5-A is easier.

Q. It is much easier, isn't it?

A. It is considerably easier.

Q. Now, try and pick up that Exhibit Y, the [280] so-called exact duplicate of the Heim patent, and try to turn that.

A. These turn very readily.

Q. They turn much easier even than the McGill bearing of 5-A, isn't that true—of Plaintiff's Exhibit 5-A?

A. No; I would say that this Plaintiff's Exhibit 5-A was easier.

Q. When you said, taking that Defendant's Exhibit Y, and you said that that was a correct illus-

(Testimony of M. F. Spotts.)

tration of the bearing of the Heim patent—now, after examination do you still think so?

A. Yes, it is a good representation of the drawing.

Q. Of the drawing. Now, did you look at the clearance between the rail in the Heim patent and the shoulders on the opposite sides of the reduced portion? Is there any clearance in the Heim drawing?

A. What kind of clearance do you mean, Mr. White?

Q. I mean, is there any clearance between the sides of the rail in the Heim drawing and the shoulders? Look at the drawing.

A. Oh, you mean off the drawing.

Q. Off the drawing.

A. The drawing—if I get your question correctly, you are referring to clearance right here between——

Q. That's right; in either figure.

A. No, the drawing itself doesn't indicate any opening between the shoulder and the rail. [281]

Q. Now, then, look at the drawing of Mr. Stallman and see whether it indicates any opening.

A. Yes, he indicates an opening in there.

Q. Isn't it true that the tighter and closer fit there is between the shoulders of the reduced portion of the roller and the sides of the guide rail, the harder it is to move?

A. It would be so if they would be so tight that they would rub rather hardly against the sides, they

(Testimony of M. F. Spotts.)

would; but with some nominal clearance in there, I don't think you could tell any difference.

Q. Now, isn't it true that in the model you have in your hand, Exhibit X, that clearance is much smaller than it would be in the model, Exhibit Y, or would you know?

A. This one is X.

Q. Yes.

* * * * *

A. The endwise clearance on the rollers in X is larger than it is in Y.

Q. The what clearance?

A. Endwise. Endwise clearance in the roller.

Q. How do you know?

A. Well, I can shove them back and forth with my thumb and finger in X. You can't do it in Y.

Q. And what makes them tight? What makes Exhibit X tighter than Exhibit Y?

A. It isn't.

Q. It isn't tighter?

A. No, this is X. This is the one that has the clearance and it is X.

Q. What makes Exhibit X harder to turn than Exhibit Y?

A. It could be a number of factors on that. The retaining spring might press a little harder against the rollers and the rollers right be packed in a little tighter. I would think those would be the two principal reasons for the difference in the ease with which the rollers would be moved.

Q. Do you still consider Exhibit X and Exhibit

(Testimony of M. F. Spotts.)

Y as a fair comparison of the structures of the Stallman patent and the Heim patent?

A. Yes, I think I still do.

Q. That is all on that particular subject.

By the way, on the Heim patent, did you read that patent?

A. Yes, I have read the patent.

Q. And what clearance does the patent call for?

A. I don't believe that Mr. Heim discusses the subject of the type of clearance you are referring to.

Q. Look on the second page of the Heim patent on the top of the second column.

A. Yes, I believe I see the line to which you refer. [283]

Q. All right; now read it.

A. "It is immaterial whether or not the supporting member fits closely against the side walls of the groove in the rolls and, in fact, it is not of material importance that the member actually be located in this groove, the real advantage, however, being that the groove acts to prevent any possibility of the supporting member dropping out of the bearing as might possibly occur if the member merely acted against the cylindrical portions of the roll."

Q. And which member are you describing now in what you were reading?

A. That is referring to supporting member 16, Prime, 16'.

Q. That is the inner spring ring, isn't it?

A. Yes, it is.

(Testimony of M. F. Spotts.)

Q. The inner spring ring—the jury knows which that is. You made a mistake. If you went to the top of that column, you would have found the fit on the rail. You can start with the sentence at the bottom of the second column which says: "In this case it is advisable to make the groove 23 corresponding to the groove 15 on Fig. 3 likewise substantially square in cross section, so that it will closely fit above the ring."

A. Yes, I see this.

Q. So it calls for a closer fit, doesn't ?

A. It says, "closely." [284]

Q. And what is a close fit?

A. There can be degrees of closeness, and a close fit might mean something one place and might mean something else some place else.

Q. We can drop that subject. I just wanted to call your attention to it.

I notice here, Dr. Spotts, that after your graduation in 1923 you took a job with Packard—or you went to the engineering training course with Packard for five years, as I understand; then you worked for three years with Jeffrey Manufacturing Company. And what did you do thereafter after you quit Jeffrey Manufacturing Company?

A. I went back to school in 1932 in the days of the depression. I lost my job as many engineers did in those days. I was in school long enough to get the Master's degree that I mentioned, and it was after that that I worked for Jeffreys.

Q. Then you went to school and then you went

(Testimony of M. F. Spotts.)

to Jeffrey and you were with Jeffrey for three years?

A. Two.

Q. Two years. And after Jeffrey you went back to school again to get your doctorate?

A. Yes, that is so.

Q. And after you got your doctorate, then you started to teach, is that right?

A. Yes, that is correct. [285]

Q. You have not been back in practical engineering, then, now, for a considerable time; since about 1937 or 1938, is that right?

A. Not for full time employment, I wasn't, but I have spent quite a good deal of time—there was one period for about ten years when I was at Northwestern and in which I spent one day a week in an industrial plant on mechanical design problems.

Q. That was actually for wages or just for——

A. No, sir, they pay me when I work.

Q. By the way, are you on a leave of absence now?

A. No; I have some graduate classes which I will make up after I get back.

Q. And does the University pay for your time for coming out here or does McGill Manufacturing Company pay you for it?

A. I am employed by Mr. Mueller for this trip here.

Q. And he pays you a daily stipend more than the usual witness fee?

(Testimony of M. F. Spotts.)

A. I have no idea about that. We haven't discussed remuneration.

Q. So you don't know how much you are going to get for this case?

A. I wouldn't have the slightest idea, no, sir.

Q. By the way, is this the first patent case in which you ever testified as an expert? [286]

A. I testified once before.

Q. Where was that?

A. That was in Oklahoma City.

Q. How long ago?

A. That was eight or nine years ago.

Q. And those are the only two cases in which you testified as a patent expert; is that right?

A. That is correct, yes.

Q. There was reference made to your book which you published for mechanical engineering, or rather, design of mechanical elements. As I examined the book, is it true that altogether on roller bearings you wrote only about a page and a half?

A. That is so.

Q. And on needle bearings, which are the type of roller bearings involved in this litigation, you wrote one paragraph, is that correct?

A. I presume it is. I don't have the book right here.

Q. I will let you look at it.

A. Well, all right. (Book handed to witness.)

Q. Your answer is——?

A. It is between a third and a half of a page, Mr. White.

(Testimony of M. F. Spotts.)

Q. But it is one paragraph?

A. It is all in one paragraph, yes.

Q. I would like to ask you whether you agree [287] with the statement that "in roller bearings the line contact provides a greater surface under pressure at the loaded points on the races. Consequently the roller bearing has a greater capacity than the ball bearing, size for size, both for normal loads and for shocks or momentary overloads." Do you agree with that statement?

A. I still agree with that, yes.

Q. Do you agree with the statement that "offsetting this increased capacity of roller bearings, the tendency of the rollers to skew increases the friction above that of the ball bearings." Do you agree with that? A. Yes, I agree with that.

Q. "The rollers must be maintained in accurate parallelism with the races." Do you agree with that, they must be maintained in accurate parallelism with the races?

A. I would say that I have revised my opinion on that point since I wrote that that you are reading.

Q. Did you write this?

A. It sounded like it was coming out of my book. Maybe I am presuming too much on that.

Q. You are presuming too much on that. Let me read some more: "It is evident that two cylinders not parallel with each other with not have a line of contact, but an objectionable form of point contact." Do you agree with that?

(Testimony of M. F. Spotts.)

A. If you will change that to several points of [288] contact, I would agree.

Q. It says, "If the skewing is not kept down and the guiding of the rollers is not of the best, the operating friction may exceed that of a good, plain bearing."

The Court: Exceed what?

Mr. White: ——may exceed the operating friction of a good, plain bearing.

A. That is quite possibly true. A good, plain bearing has an exceedingly low friction.

Q. "to make the roller bearing rotate as smoothly and as freely as the ball bearing requires expensive refinement in design and in manufacture in addition to the more complicated shapes for machining and grinding." Do you agree with that?

A. Yes, I would.

Q. "The tendeney of the rollers to skew or the increased friction arises in two ways. The shape of the roller and raceway may not be such as to produce a pure rolling motion." Do you agree with that as one of the causes—the shape of the roller and raceway may not be such as to provide a pure rolling motion? A. That is very likely so.

Q. "Slight deviation from the pure rolling form or slight inaccuracy in dimension will make one end of the roller precede the other." Do you agree with that? A. Yes. [289]

Q. "Secondly; the usual straight roller will skew under the smallest misalignment because one end of the roller will compress more than the other

(Testimony of M. F. Spotts.)

and will have a smaller diameter." That, as you remember, was the testimony of Mr. Stallman. Do you agree with that?

A. Not entirely. The roller upon compression doesn't make a circle any more; it sort of flattens out into an egg shape, and with that qualification, I think the statement is largely true.

Q. Well, this exact statement—you mentioned that your sources of information for your textbook were the catalogues of the large bearing companies, didn't you? A. Yes.

Q. Well, I was reading from an engineering and designing handbook by SKF. Do you agree that SKF is a large bearing company?

A. Yes, they are a large company.

Q. Are they the largest, as a matter of fact?

A. I wouldn't know.

Q. I will let you look at that and check the statement.

A. I will take your word for it.

Q. This is an edition of 1924 of the SKF Bearings, copyright 1924, SKF Industries, Inc.

A. Yes.

Q. Now, then, we could agree in this case, [290] couldn't we, that skewing does make a difference in the effectiveness of a bearing?

A. It does make a difference.

Q. When you were testifying that the skewing is not remedied and the rollers are not brought back into straight position, then they just keep on rotating around in the skewed position?

(Testimony of M. F. Spotts.)

A. Yes, sir.

Q. Always? A. Yes.

Q. And you said, if I remember correctly, that that didn't make much of a difference. Do you want to change your testimony in that respect?

A. I would like to look at the record. If that was at the end of the day when we were talking about the model, or whether it was a straight question.

Mr. White: Yes, I will read the record.

The Court: I think you said that to me in answer to a question, or something to that effect.

The Witness: When we were discussing the model at the end of the day?

The Court: I don't recall.

The Witness: Well, I was—if the skewing has no effect—it doesn't have very much effect in the model.

Q. (By Mr. White): You meant only this [291] particular model, is that right? Did you mean that under actual working conditions if the rollers remained skewed all the time, it would make an important difference?

A. Rollers can remain skewed all the time. It is the degree of the skewing in connection with the amount of the load the bearing is carrying—the combination of the two factors—that is going to determine whether there will be success or failure in the bearing.

Q. I was asking you to determine under nor-

(Testimony of M. F. Spotts.)

mal working conditions, with the normal load on the bearing.

A. Then I would say that the maker would rate the bearing so that it should be satisfactory when it is applied according to his rating.

Q. Your answer is that the manufacturer will rate the bearing? A. For load capacity.

Q. In other words, you provide a good big bearing for a smaller load; is that what you have in mind?

A. Well, he decides. He decides how much load his bearing should carry and the customer in general abides by that. [292]

* * * * *

Q. (By Mr. White): You admit that the McGill bearing skews all that time as it goes around, don't you? That is what you demonstrated to the jury here.

A. As far as our testing goes, it would appear that that would be so.

Q. To your knowledge, does McGill Manufacturing Company make a special allowance in rating so that the bearings can run around in a skewed position?

A. I don't know how the McGill Company rates their bearings.

Q. Did you examine the McGill bearings upon your own initiative or upon the request of McGill Manufacturing Company?

A. No, McGill never requested anything of me.

(Testimony of M. F. Spotts.)

Q. Who requested you to examine these bearings? A. Mr. Mueller.

Q. And when was the first time that you saw one of these McGill bearings?

A. About a year ago.

Q. And what was the occasion for seeing the bearing?

A. I got a letter from Mr. Mueller saying that he was preparing a defense in a roller bearing case and that he would like to have me do some engineering work for him.

Q. What was the engineering work you did for him? A. Would you repeat that?

Q. What was the engineering work you did for him? [293]

A. I went down to his office some days later and we talked over the matter and it appeared that it would be quite helpful if we could get some more information on this subject of skewing.

Q. Then what did you do in order to get more information on the subject of skewing?

A. We thought some tests would be the most reliable way of finding that out.

Q. Didn't you know previously, looking at Fig. 6, Stallman patent, that plain roller bearings were skewing? Didn't you know that?

A. Oh, I knew that many years ago.

Q. What corrects the skewing on a plain roller bearing of the type of Fig. 6 in the Stall. .n patent drawing there?

(Testimony of M. F. Spotts.)

A. To my own knowledge, the skewing is not corrected.

Q. What happens?

Mr. White: Excuse me. I will clear this so that the jury can see. [294]

I refer you to Fig. 6 of that Stallman patent drawing. We might discuss just what happens when skewing occurs on the plain roller bearing. That is the kind you know about.

A. Figure 6 of the Stallman patent is a very special kind of a plain roller bearing.

Q. Wherein is it special? The jury wants to know that, I think.

A. Special because the rollers are long and thin, because the end motion is prevented by flanges or other members at the ends of the rollers; there is no gauge or separators in the bearing to keep the rollers apart. Those are the principal differences.

Q. That is what you call what?

A. It ordinarily goes by the name of needle bearing.

Q. That is nothing special, is it?

A. No, but it is certainly distinct from other types of roller bearings.

Q. You did not say so in your book, did you? You just listed it as one type of roller bearing.

A. Then I will take back the words "special type." I will say it is a type of roller bearing.

Q. I just want to correct an incorrect impression. Isn't it true that these little bearings, since

(Testimony of M. F. Spotts.)

they were little bearings, had those flanges on the opposite sides that you mentioned there, at the opposite ends of those bearings or rollers? [295]

A. Are you asking me if there are flanges at the ends?

Q. You mentioned it was special in that respect, but isn't it true that is standard with any kind of common needle bearing?

A. That is standard in any needle bearings and it is also standard to have guide rails in needle bearings.

Q. Fig. 6?

A. Oh, no, not in Fig. 6, no. This figure just illustrates one bearing.

Q. Did you say extended to have guide rails in the bearings? Point out in your book where you show one of those standards. You described all the standards presumably.

A. The book was written before I became acquainted with this type of bearing. I didn't know about it when I wrote the book.

Q. So far as you are concerned the kind of roller needle bearings with a guide rail were new to you up to the time that Mr. Mueller called you up?

A. Probably were. I could have heard of them before but I had not seriously given thought to them.

Q. Then it would be your testimony that so far as the time of your visit to Mr. Mueller was concerned, you would consider a roller bearing with

(Testimony of M. F. Spotts.)

a guide rail as old or new? I am referring now to the time when Mr. Mueller called you in the case. [296]

A. You mean do I think——

Q. Not what you think now. I am trying to refresh your memory of what you might have thought about it. Mr. Mueller called you in, and before you saw all these patents, prior patents that were thrown at you, at the time when Mr. Mueller called you in the case—do you remember the time?

A. Yes, I do.

Q. You got a letter from him? A. Yes.

Q. And he talked about Guiderol bearings, didn't he? A. Yes.

Q. And he showed you some bearings which had guide rails on them, didn't he? A. Yes.

Q. Was that the first time you saw such bearings?

A. The first time I examined them in detail.

Q. Did you see before then any such guide rail bearings, Dr. Spotts? We have to talk so the jury understands us. A. I don't believe I did.

Q. Then the answer was no, wasn't it?

A. All right, it is no.

Q. So, so far as you were concerned, the guide rail in a roller bearing was new up to the time you were called into the case by Mr. Mueller? [297]

A. Yes, sir.

Q. And you testified on direct examination that your source of material for Chapter 9 of your book were the catalogues of the various manufacturers

(Testimony of M. F. Spotts.)

of bearings, is that correct, ball and roller bearings? I am jumping from point to point to make the examination shorter, but I would like to call your attention now to this demonstrator here. Isn't it true that these two bearings in Defendant's Exhibit T move at different speeds?

A. So far as I know they are moving at the same speed.

Q. So far as you know, you were using a Stroboscope, an instrument like that, is that true?

A. Yes, I was using a Stroboscope.

Q. That Stroboscope was synchronized, not synchronized but approximately synchronized with the bearing T-2 on the left hand side facing the jury, is that right? A. Yes.

Q. And it was not synchronized as well on the bearing T-3 on the right hand side facing the jury?

A. You may have had to make minor adjustments, but at the same time if I had kept the light on the T-2 bearing, I probably would have had to adjust there also. The speed varies a little bit.

Q. All right. It varies. That is what I wanted to know. Does it move slower or faster? [298]

A. I mean the speed of both varies.

Q. Speed of what varies?

A. Speed of both pulleys varies.

Q. That would vary the rotation of the bearing also, wouldn't it?

A. Yes, both of them simultaneously.

Q. You mean it varies between the time you

(Testimony of M. F. Spotts.)

shift your stroboscope from one bearing to the other? A. It could.

Q. Well, did it in every case, when you shifted your stroboscope from bearing Exhibit T-2 to bearings Exhibit T-3 there was a change? One was clearer, T-2 was clearer than T-3? That would indicate, considering the constant vibration of the stroboscope, that the speed was different, wouldn't it?

A. I do not believe I would agree with that.

Q. Try it now.

A. Could I give a reason for my answer?

Q. Go ahead.

A. We are directing the light of the stroboscope principally on the rollers. The outer races no doubt go around at the same speed but the rollers are going around at approximately half the speed. That speed of the rollers will vary a little bit if the friction is not quite the same in the two bearings, and that is quite to be expected, so that the group of rollers going around in one bearing then [299] could be different slightly from the speed of the rollers going around in the other bearing, even though the pulleys would be exactly the same.

Q. And the belts would have the same tension?

A. Yes, I do not think there was any slip of the belts.

Q. Go over and test those belts and testify whether one of the belts is tighter than the other.

A. One belt is probably tighter than the other.

Q. Don't say "probably". I want you to look

(Testimony of M. F. Spotts.)

at it. We do not want probabilities. This can be tested. Just put your finger on it.

(The witness did as requested.)

A. My answer is that the looser belt has enough tension in it to keep the pulleys moving without any slip, the same as the tight one does.

Q. But it is a different tension, isn't it?

A. Now, about the skewing operation, don't you think that the reason for the skewing of this bearing is that the forces which act upon one side of that bearing are greater than the forces that act on the other side?

A. Are you speaking of the forces on the rollers?

Q. On the rollers.

A. Yes, that is the principal cause.

Q. There is an unbalanced force on one side of the bearing, on one side of the reduced portion, [300] with respect to the other side of that same roller. I mean on the other side of the reduced portion, is that correct?

A. Yes, the roll is pinched on one side harder than it is on the other.

Q. Isn't it true that when you expose one side of this roller 12 entirely you remove the outer race, then you do not apply to that side any force at all?

A. All right.

Q. That is correct. So there is a great unbalance when you remove the outer race, you cut it away, than normally, isn't that true?

A. When the roller is in that opening, it is.

(Testimony of M. F. Spotts.)

Q. That is right, and therefore you would require much greater force to correct the skewing than if the outer race was in position?

A. Could I amplify it a little bit without making a speech?

Q. We do not want you to make a speech. We want you to state facts.

A. The direction of the belts is horizontal and the skewing, the load on the pulley then is like this. The pinching takes place approximately at opposite sides of the bearing on a horizontal line through the center. The opening we look at is at the top and bottom. The rollers in there do not have hardly any force on them, so it does not matter whether the opening is there or whether it is not. [301]

Q. You do not mean to say that there is not a substantial difference as to the frictional contact on one side of that roller than on the other side?

A. The friction comes from the force that is applied to the roller and if you do not have any forces on the roller you do not get any friction, and in the top and bottom there are no forces applied to the roller and I would say that the friction is very, very small.

Q. All right, Professor, then why do the rollers rotate on the top and bottom if no friction is applied to them?

A. Oh, they probably get that much to make them turn.

Q. Don't say "get that much". You might as

(Testimony of M. F. Spotts.)

well say that the outer race on one side contacts the roller and rotates it, doesn't it?

A. When it is in the so-called load zone.

Q. It does not rotate in the zones where you cut it away?

A. I don't believe I know that answer.

Q. Well, you saw it rotate. What rotated it?

A. Oh, it was carried bodily around, and whether it was turning at the same time or not I do not know that.

Q. You would not know whether it rotates?

A. Not up in there.

Q. You made tests of this, didn't you, for a long time? A. Oh, yes.

Q. And you still do not know whether it rotates [302] or not at that point where the outer race is cut away? A. That is correct.

Q. Can that be determined?

A. It might if enough energy and money would be spent on the question.

Q. On this model you could not determine whether it rotates or not?

A. I could not tell very well from that model there.

Q. So your visual observation would not be sufficient?

A. We were not so much interested in whether the roller was rotating or not about its own individual axis as we were with other questions.

Q. Which were the other questions?

A. Skewing.

(Testimony of M. F. Spotts.)

Q. In skewing, you had all of your skewing all the time, and it is your theory that those rollers work the same way on the other parts of those bearings in Defendant's Exhibits T-2 and T-3 than at the places where you cut away the outer race, is that your testimony?

A. If I understood you correctly, is the same skew in the opening as it is in the other places of the bearing?

Q. I say they work the same way or not. All right, answer it. Is it the same skewing all around?

A. Yes, it is, approximately or very closely at the same skewing all around. [303]

Q. How do you know?

A. The clearance between the rollers is so very small along the sides, that if one of them is going to tip or cock very much, or as much as we saw, then all of them have to do so.

Q. So that is a theory, but you can't develop a theory of whether or not, if all the rollers rotate and they are close together, whether the rollers opposite the opening of the outer race also rotate or not, and on that you have no theory, is that right?

A. We would not know that. We know they are cocked around and skewed, but whether they are individually rotating or not we do not care very much. We do not know, let us say, and secondly we do not care very much. We do not carry any load on it. It doesn't make any difference.

Q. Are your outer races at that point, at the

(Testimony of M. F. Spotts.)

point where you cut away the outer edge on one side? [304]

A. The place where the race is cut away, of course, they are not contacting.

Q. They are not contacted by the outer race on the other side of the roller opposite from the cut-away portion?

A. I should judge there would be contact there.

Q. If they are contacted and the outer race is rotating and the inner race is stationary, doesn't friction develop? Isn't that a frictional contact?

A. Yes, there would be some friction.

Q. If there is a frictional contact, then one of two things can happen: Either the rollers rotate or the outer race will slip, is that right?

A. It would be one or the two.

Q. No; which happens?

A. It could be either one or the other or part of both.

Q. You studied this matter now for over a year?

A. We have made no determination of what forces, ordinarily small, would be acting upon the rollers in the unloaded portion of the bearing.

Q. What determination did you make on the loaded portion of the bearing?

A. We did not make any determinations there either, except to know that those rollers would have to carry the load of the bearing. We would know that.

Q. Then how did you know that the contact [305] between the shoulder of the roller bearing,

(Testimony of M. F. Spotts.)

the reduced portion, and the side of the guide rail does not develop enough friction to straighten it out?

A. Just can't make enough force to do that.

Q. How do you know? You said you made no determination of forces on this bearing.

A. If the force that you develop when the roller contacts the guide rail would be great enough to straighten out the roller, we must keep in mind that the lack of parallelism between the two races is taking place all the time. That is unchanged while the bearing operates. It is this lack of parallelism that puts this uneven force on the roller that you were just speaking about, and this uneven force on the roller causes it to skew. And if one roller or a few rollers in the load zone skew, then they skew all the way around.

All right. Let us say that the roller, the skewed roller, moves endwise in its rolling until it touches the guide rail. Now, if there would be a force big enough at that point and able to straighten out the rollers, and supposing it did so, then the straightened roller is still subjected to the same set of forces that made it skew in the first place, and it would immediately go back into its skewed position again. And we know that that does not happen.

Q. How do you know that it does not happen?

A. The skewed roller moves endwise until it [306] touches the guide rail. At the same time the moving race moves endwise then. Of course, it is

(Testimony of M. F. Spotts.)

touching the skewed roller and is shifted over to the side.

All right; if the roller goes into a skew, that happens, the race moves over to the side. Now, if the rollers are incidentally straightened out by the effect of the guide rail, then the roller would not stay over to one side as the skewed rollers had thrown it, but would resume its normal position again so that the race would be continuously rubbing back and forth in step with this wiggle that the roller would have. We do not observe——

Q. You are talking now about a moving guide rail or a stationary guide rail?

A. Either one.

Q. You mean the stationary guide rail would wiggle, too?

A. No, the guide rail does not wiggle. It is the roller that wiggles. The skewing and unskewing, or correcting or uncorrecting the skewing.

Q. Which means the skewing wiggles but it isn't the races that wobble, is that right?

A. Yes, if the roller skews and then is corrected, it could be in a continual state of motion, something like this.

Q. That is right.

A. And then the moving race would be in continual motion back and forth, then. [307]

Q. How can the moving race be in continual motion?

A. Oh, when the roller skews and touches the

(Testimony of M. F. Spotts.)

race, that skewed, cocked position of the roller draws the race over to one side.

Q. How can it? Show me on plaintiff's Exhibit 5 how the outer rings there can wobble back and forth.

A. Not only can it not wobble back and forth but you can't touch the shaft.

Q. That is right, but do you know why? Because there is a plain roller bearing in it of the kind of Fig. 6, a plain needle bearing.

A. I presume that it is loaded so heavily in the middle it would have difficulty turning anyhow.

Q. We will conduct an experiment in court. Take out those bearings and put in the bearings 5-A and sort of see how much the plate is bowed here, the tightness, and tighten it up in exactly the same way. Then we will see the difference as to how you can turn it with a straight roller and with one that has guide rail rollers. Please do it. You do not have to take it off completely. Just loosen it enough and you can push those bearings out.

Mr. Mueller: Are the bearings you are going to substitute in evidence, Mr. White?

Mr. White: Yes, 5-A, the same bearings which we had in it before and with which Mr. Stallman demonstrated. And another [308] one of the same kind.

May Mr. Stallman help me? He has stronger hands than I have, your Honor.

(The bearings were withdrawn from Plaintiff's Exhibit No. 5.)

(Testimony of M. F. Spotts.)

Mr. White: Let the record show that with the assistance of Mr. Stallman we have substituted Exhibit 5-A in place of the straight roller bearings on Exhibit 5.

Q. Now, Doctor, tighten it up just as tight as it was before, or as tight as you can. You can tighten it more if you wish.

A. Mr. White, would you permit me to tighten it just as far as we might find it in a commercially acceptable shaft?

Q. It would not be a fair comparison to the roller bearings. Tighten it as tight as was the roller bearing.

A. If you tighten it like it was before, it is so tight it is ridiculous, and no commercial machine would ever operate that way.

Q. You admit in advance that it would not lock? 5-A would not lock?

A. No, I only say if you make it as tight as it was before, it would not be comparable to any commercial device.

Q. Would you say it would lock just like the roller bearings did?

A. A fair comparison would be to try to put in some [309] misalignment here that you might find in a commercial product and then test the two bearings.

Q. Then at this time you do not consider it advantageous to yourself to perform the experiment for the jury by tightening that just as tight as the other one was and then demonstrating that the

(Testimony of M. F. Spotts.)

Stallman type bearing will not lock under the same pressure?

Mr. Mueller: I object to counsel for the plaintiff making a speech to the jury. I believe that is improper conduct.

The Court: Of course, he is like all experts; he wants to argue about it instead of doing it.

The Witness: I would like the record to show, then, I am doing something that I never saw in all my life in engineering.

The Court: It is not a question of whether you saw it or not. There were some bearings in there. They were tightened to a certain extent. There have been some other bearings substituted. All the attorney has asked you to do is to tighten it to the same extent and see what happens. [310]

The Witness: Well, I have tightened it and turned the clip.

Q. You can turn it, can you?

A. Yes, I can turn it. It is difficult but it can still be turned.

Q. Now with that difference——

A. Not a very big difference.

Q. With that difference not a very big difference, why is it that you did not advise Mr. Mueller that these Guiderol bearings ought to be abandoned and they ought to return to the plain old-fashioned needle bearings shown in Fig. 6 of the Stallman patent? Did you advise him that?

A. Did I advise him that?

Q. Yes.

A. No, I did not.

(Testimony of M. F. Spotts.)

Q. I would like to draw your attention to these prior patents and these various drawings introduced in evidence. I call your attention to Defendant's Exhibit W on which there is a combination of illustrations of the Heim patent and the Kempster patent. Now did you make that selection of combining those figures about the same way?

A. No, I didn't make the selection.

Q. Do you agree with that selection?

A. I think it is a good representative selection.

Q. Do you think that Kempster and Heim are about the same [311] representation of the prior art?

A. They are not quite the same in proportion, they are not too very exact, but they give a somewhat different coverage of this type of roller bearing.

Q. Then in that case which would you choose as compared with the Stallman patent drawing? Which would you choose as being closer to the Stallman bearing, the Heim or the Kempster?

A. Heim is proportioned in a way that would be closer to Stallman.

Q. Could we agree then that Heim is the closest prior art patent which you testified to?

A. I would hardly—I would have to think that over. There are so many features——

Q. Think it over.

A. There are so many features in these bearings I would hate to say right off.

Q. Well, think it over.

(Testimony of M. F. Spotts.)

A. The differences appear to be only in degree or in proportion, as *as* to structure and function I couldn't see much difference between Heim and Kempster.

Q. Well, could you see in Kempster, for instance, those spacing discs which are between the rollers running on a track?

A. Yes, that is the principal difference in Kempster; these [312] spacing rollers, as you have said.

Q. Are there any such spacing rollers in the Heim patent? A. No, there isn't.

Q. I call your attention to Defendant's Exhibit P—I believe that is the exhibit number of the enlargement of the Zahn patent drawing.

A. Q.

Q. Q. Now you can see the Heim patent drawings right next to it. A. Yes.

Q. And on the other side you can see the Stallman patent drawing. A. Yes.

Q. Which would you say is closest to the Stallman patent drawing, the Heim patent or the Zahn patent drawings as you see them there?

A. The differences that we observe are simply in proportioning or dimensions of the parts. Functionally and structurally the similarity carries right straight through.

Q. Would you say that the Zahn patent structurally is closer to the Stallman patent than the Heim patent?

A. If you consider the two guide ring bearing

(Testimony of M. F. Spotts.)

of the Stallman, I would say that they were close to each other.

Q. Considering Fig. 5; that is the only figure. Now how about Fig. 1, Fig. 2, Fig. 3 and Fig. 4 of the Stallman [313] drawings?

A. They only have one guide rail whereas the Zahn patent has two guide rails on all the other rollers.

Q. Therefore, as to all the other figures, isn't it true that Heim would be a much closer reference than Zahn?

A. As far as that point is concerned.

Q. Well, let's go to the operation of the Zahn patent. Look at Fig. 2. Isn't it true that on Fig. 2 you have a sort of a head at each end of that roller (d), or is it roller (a)? A. (a).

heads at the end of each roller (a) are outside of the ring on the shaft, is that right?

A. Yes, we have the engagement as you mention it there.

Q. Now do you recall in the Zahn patent that there is some special provision made as to the spacing; relative spacing there in each of the grooves with respect to the opposite sides that connect on the shaft?

A. Yes, he had to take care of that because he had two grooves in his roller.

Q. What is that special provision? You might as well advise the jury that there is some special feature in Zahn that you forgot to mention before.

(Testimony of M. F. Spotts.)

A. He wanted the forward end of the roller to make contact first.

Q. Well, what did he do structurally? Point it out. [314]

A. Then he increased the clearance to increase the clearance on the inner side so that that would take place.

Q. He says it differently, doesn't he? He says that there must be bigger clearance on the inside than on the outside; it must touch on the outside, isn't that right?

A. I believe that is the way he says it.

Q. The way I said it or the way you said it?

A. No, I mean the way you said it I think agrees with Zahn. Perhaps I'd better read it to make sure, but that is my recollection.

Q. My idea merely is that the jury gets a clear picture of everything in that patent, not only what you said before. Look at Fig. 4 of that patent. You spoke about that on direct examination, didn't you —Fig. 4 of the Zahn patent?

A. What did I do?

Q. You spoke about that; you explained it, didn't you?

A. Well, it was mentioned, I am sure, but I don't just recall in what connection.

Q. Did you tell the jury at that time that those heads at the end of each roller (a) ar outside of the bearing proper? A. No, I didn mention that.

Q. But they are outside of the bearing proper, aren't they?

(Testimony of M. F. Spotts.)

A. They do not lie within the low tearing length of roller (a).

Q. And what you call the low tearing frame are the races, [315] isn't that right? They are outside of the races? A. Yes.

Q. In fact they are guided on separate members which are inserted into the ends of the bearings between the races?

A. Oh, they are attached rigidly to the races; they are not integral.

Q. You are referring now to what point?

A. The guide rail (g) is attached permanently to the shaft (b). The guide rail (g) here is attached permanently to the fixed race (c). They are not integral but they are permanently attached.

Q. Isn't the guide rail (g) in Fig. 4 on a hub (r), I believe is the proper number? Not (r); is that a (p)? A. (p).

Q. (p)? A. Yes.

Q. Isn't the guide rail part of that?

A. Yes, it is.

Q. And you can pull out that hub, can't you? You can pull it off the shaft? A. Yes.

Q. And there is a ball bearing in it?

A. Yes.

Q. There is a ball bearing on each end of that in order to hold the actual Zahn bearing in place; isn't that true? [316]

A. You can see the ball here quite plainly in this Figure 4.

(Testimony of M. F. Spotts.)

Q. In this Figure 4 there is only one ball bearing on one side? A. It looks that way.

Q. On Fig. 2 there are two ball bearings, isn't that true, one on each end? A. Yes, there is.

Q. Is there such a ball bearing required on the end of the Stallman bearing shown on the Stallman patent drawing?

A. The ball bearings here take care of end thrust in the assembly.

Q. That is correct.

A. And there is no provision made for end thrust in the Stallman bearing.

Q. I would like to call your attention again to the Kempster patent. Does your recollection agree with mine, Doctor, that you said you didn't know whether in the Kempster patent the outer race was stationary or rotating?

A. I said that so far as figures 1 and 2 were concerned.

Q. That wouldn't apply to figure 3, is that right?

A. Figure 3 resembles very much the hub of a wheel, and it may be rotating in this case.

Q. Did you read the Kempster patent?

A. Yes, I read it, yes, sir.

Q. Just open it up and it will enlighten you whether it is [317] rotating or not.

A. I presume you mean the first page, second column, line 63?

Q. Yes.

A. To quote: "When the sheaves or wheels are composed wholly of metal, the circular bushing or

(Testimony of M. F. Spotts.)

casing 2 is formed integral therewith as shown in Figure 3."

Q. Well, that is as to Fig. 3. However, as to Fig. 2, I call your attention, to shorten the testimony, to column 1 of the patent—the same patent, column 1, page 1, line 28, which says:

"Figure 1 represents an end view of my invention as applied to a bushing or casing for sheaves, wheels, etc."

Now sheaves and wheels are rotating elements of stationary shafts, are they not?

A. Ordinarily a sheave rotates.

Q. Always a sheave rotates, doesn't it?

A. Nearly always.

Q. When doesn't it rotate?

A. I would have to think, but I can think of one.

Q. Can you now? A. Probably not.

Q. After all, you are a teaching professor; if your students asked you the same question do you have to go to a book to look it up? [318]

A. I might have to look a lot of places, I am sure.

Q. I can tell you that there is no instance where a sheave is stationary.

A. I would be inclined to disagree.

Q. Well, this trial isn't long enough to prove your point.

Doctor, then, as far as you are concerned, Figure 1 was an indication there that the outer race was

(Testimony of M. F. Spotts.)

rotating and the shaft was stationary, isn't that right?

A. I believe that is the intent of the language.

Q. That is the intent of the language?

A. I certainly agree with the words.

Q. And furthermore, wouldn't you be sure as a teacher of machine design that when you see that flange 5 on the end of it with bolts in it, that that would be put on there for the purpose of attaching it to a sheave or wheel? You don't have it in the ordinary bearing where the shaft rotates, do you?

A. Oh, I wouldn't be able to tell that just from looking at flange 5 because on our other drawing here we have an example.

Q. On which drawing do you have an example? You mean that combination drawing? A. Yes.

Q. Where did you take that example from?

A. It is shown in sketch G.

Q. Sketch G on that miscellaneous drawing of Defendant's Exhibit W? [319]

A. Oh, you can make a device like this without reference to any reference work.

Q. Well, did you make that device?

A. No, I did not.

Q. Would you attach normally a bearing like that in a fixed housing as you show in G? Is that your preferred design?

A. I can on the face of this see no objection to doing that.

Q. Is that the recommended, ordinary design to

(Testimony of M. F. Spotts.)

put a bearing in a housing with a flange 5 like that? Is that what you recommend in your book?

A. I don't recommend it in my book, but I certainly wouldn't hesitate to. There is nothing wrong with it.

Q. Which means that is a theoretical design but not the ordinary way of securing it; is that right?

A. I presume you would find more examples of doing it otherwise.

Q. Well, I will give you this SKF catalogue which has also examples of bearings. Show me one where they have put a bearing in a housing that way.

A. SKF I don't believe makes an outer housing that looks like this.

Q. Who makes an outer housing that looks like that? A. I don't know of anyone. [320]

Q. Well, that is what I wanted to know. [320-A]

* * * * *

Mr. White: If your Honor please, we are through with the cross-examination.

The Court: Any redirect?

Redirect Examination

Q. (By Mr. Mueller): Dr. Spotts, there is testimony about the shoulder of the recess in a roller engaging in the guide rail, and when there is engagement between the neck of the roller and the guide rail there is friction developed, is that correct? A. That is correct.

Q. When the roller changes position so that

(Testimony of M. F. Spotts.)

there is no longer engagement between the neck of the roller and the guide rail, then that frictional force is gone; is that correct?

A. You mean if something did cause the roller to change?

Q. That is correct, if something caused the roller to change.

A. And it did not touch any more, then there would not be any friction.

Q. So then at that point, when there is no touching between the roller and the guide rail, then there is no friction to cancel the skewing, is that correct? A. That is so.

Q. So then we are not able to think of that frictional force which is developed when the roller touches the guide rail; we can't think of that as a force that reaches out and moves the roller, is that correct? It is in effect only when there [321] is engagement between the roller and the guide rail?

A. Yes, only while the two bodies are touching each other.

Mr. Mueller: That is all.

The Court: Anything else?

Mr. White: Just one question.

Recross Examination

Q. (By Mr. White): When the shoulder on this reduced portion of the roller does not touch the guide rail at either side, there is no skewing, is there?

A. Oh, the roller might be a little out of mis-

(Testimony of M. F. Spotts.)

alignment but it would not last very long because it runs endwise and comes in contact.

Q. But there is not misalignment for it to turn far enough for the shoulder to touch the guide rail, is that correct?

A. Oh, no, that comes because of the roller moving bodily is an endwise direction.

Q. Let us get down again from the beginning. You said that when the roller is straight, there is no friction between the shoulder of the reduced portion ot the roller and the guide rail, is that right?

A. Not straight. I said when they didn't touch.

Q. When they didn't touch? A. Yes, sir.

Q. When they do not touch, that means the roller did not skew far enough to touch, is that right? [322] A. No, that is not quite right.

Q. If it skewed far enough it would touch, wouldn't it?

A. If it would skew far enough you could make it touch.

Q. You do not make it touch because it is in the bearing?

A. Yes, if you did twist it enough, you could twist it enough to make it touch.

Q. Isn't the twist in the bearing enough to touch? A. Not from that cause alone.

Q. Does it or does it not twist enough to touch?

A. Mostly not.

Q. So in your opinion there is no skewing in this bearing, is that right?

(Testimony of M. F. Spotts.)

The Court: No what?

Q. (By Mr. White): No skewing in this bearing. A. Certainly not.

Q. Now, you disagree with what I read out of that SKF report, is that right?

A. The rollers can skew only a slight amount, and the shoulder may not touch the guide rail, but this slight amount of skewing causes that roller to move endwise until it does touch the guide rail. The big model shows that. We showed that yesterday.

Q. What we are talking about is, as shown on the big model, as the roller skews and it moves along, alternately it will touch the guide rail, is that right?

A. Yes, it moves endwise until it does touch the guide rail every time.

Q. I just want to bring out there is practically no skewing at the time and it does not touch, is that right?

A. That depends upon the dimensions of the body. It might be skewed just a little bit. It might be skewed about as much as it possibly could.

Q. I think we could avoid theorizing if we possibly could. If you will look at your own model of Defendant's Exhibit S-1, isn't it true that in this position where the roller is straight——

A. Yes.

Q. ——the shoulder does not touch the side of the guide rail?

A. It might just happen to be over to one side and doesn't touch.

(Testimony of M. F. Spotts.)

Q. Does it touch now? A. No, it does not.

Q. Is that the normal position?

A. The normal position is to have a little bit of skew.

Q. All the time?

A. Nearly all the time. I can conceive of conditions being so perfect where they might run straight, but evidence seems to tell us that ordinarily there is some skew.

Q. And you have no other evidence than what you testified [324] to in this courtroom as to that?

A. That is as far as it goes, but it is very conclusive.

Q. To you; and now all this evidence that you have in the courtroom proves to you that there is always a skewing in these rollers, is that right?

A. Well, we have loads on the bearing which tend to cause the two races to get out from being parallel with each other.

Q. You are again going to another story. Let us go back to this. This roller is straight. Isn't this true, that the bearing is designed for this position, Professor? You can answer that yes or no.

A. Yes.

Q. All right, answer it that way. Isn't it true that the skewing is corrected when this roller gets out of the position for which it was designed, by reason of some forces in the bearing? Is that right?

A. Yes.

Q. As long as the skewing is about this far, as

(Testimony of M. F. Spotts.)

I am skewing now, the shoulder does not touch the sides of the rail, is that correct?

A. It isn't touching now.

Q. When it is skewed far enough, it touches, doesn't it? A. It does.

Q. That is what I asked you in the beginning.

A. There are other ways to make it touch. I don't know [325] which one you are referring to.

Q. I was talking about skewing. After all, you can make it touch with a sledge hammer, can't you? A. Could I show you now what I mean?

Q. No, you can't show me any more. I didn't ask you a question. If your attorney wants to ask you about it, he can ask you further questions.

I am through with the recross examination.

Further Redirect Examination

Q. (By Mr. Mueller): Dr. Spotts, from the standpoint of ordinary machinery in which there are bearings, considering ordinary machines today in which you put roller bearings, isn't it a fact that there is enough misalignment just in the ordinary course of putting together a commercial machine so that there will be skewing between the raceways of a roller bearing in that machine?

A. I would say that is so in the ordinary commercial machine work.

Q. So that in the ordinary machine used in the ordinary course of business today there is sufficient misalignment between the races of roller bearings in that machine such that there will be skewing of the rollers? A. That is so.

(Testimony of M. F. Spotts.)

Mr. Mueller: That is all.

Mr. White: No more cross, your Honor. [326]

The Court: That is all.

* * * * *

Mr. Mueller: There is a stipulation, your Honor, we discussed with reference to the period of negotiations, let [327] us say, and this has been approved by Mr. White. Of course, the papers all went in, you know, and we have some more I was merely holding. They will go into the same exhibit number of the collection that we have, and those have been shown to and discussed with Mr. White.

It is stipulated and agreed between counsel that after the McGill Manufacturing Company letter of June 23rd, 1948, Plaintiff's Exhibit 6, and continuing to the McGill letter of December 6, 1950, Plaintiff's Exhibit 8, and on into 1951 there was a continuing exchange of correspondence and a series of conferences between Stallman and McGill Manufacturing Company officials and their attorneys about the arrangements between them and exploring the possibilities of a new arrangement. The old arrangement was terminated without there ever having been an agreement to a new arrangement.

The conferences and correspondence were discontinued and the old arrangement was terminated upon the advice of McGill Manufacturing Company counsel that Stallman patent 2334227 was in his opinion invalid, and Mr. Stallman was advised of that fact and furnished copies of the opinion of counsel.

The Court: Is that satisfactory, Mr. White?

Mr. White: Yes, your Honor.

The Court: Very well. You have other documents that go into that exhibit number? [328]

Mr. Mueller: Yes.

The Court: Exhibit H—is that the one?

Mr. Mueller: I think it is. We stopped everything when you raised the question. Supposing we wait until the conclusion?

The Court: You can arrange that.

Mr. Mueller: Yes, we can. In fact, we have arranged it.

The Court: Is there anything else you want to clear up on the record?

Mr. Mueller: We have nothing.

The Court: Then the defendant rests.

Mr. Mueller: The defendant rests.

The Court: Do you want to have some rebuttal?

Mr. White: Just a few questions of Mr. Stallman.

The Court: All right.

RALPH STALLMAN

the plaintiff herein, recalled in rebuttal; previously sworn.

Direct Examination

Q. (By Mr. White): Mr. Stallman, did you have any experience with applications of users of the type of bearing described in your patent where the outer race was rotated? A. Yes.

Q. This only customer that was left to you, this

(Testimony of Ralph F. Stallman.)

California Press Manufacturing Company, what kind of bearings do they [329] use?

A. We make a bearing for them on a stationary shaft on which we always put the rail on the stationary shaft. We have made that bearing——

Q. And the outside race rotates, is that right?

A. Yes. They make their own outer race and the rail and the rollers are on the shaft. We have made that bearing for eight years; we have made thousands of them and they are all over the world.

Q. Which means in that case you shifted the guide rail from the outer race to the shaft because the outer race was rotating; is that right?

A. That's right; put it on the stationary race.

Q. Why did you change that way?

A. Well, we knew enough of this development that that was necessary for satisfactory performance, and our results have been that our failures are less than one fourth of one per cent over eight years.

Q. And what was your previous experience with installations where the outer race was rotating?

A. The experiences that we had formerly were with other bearings.

Q. With what kind of bearings?

A. Well, those bearings happen to be made by the R.B.C. Company. That is before I manufactured my own bearings. [330]

Q. Were they bearings in accordance with your patent? A. No.

Q. Did you have any experience with bearings of

(Testimony of Ralph F. Stallman.)

the kind shown in the patents where they were installed in places where the outer race rotated and the guide rail was in the outer race?

A. Yes, we had early tests that discouraged us on the use of that right away.

Q. With whom?

A. Early tests; our own laboratory tests that showed smearing and wearing on the inner races.

Q. Did you have any installation of any kind?

A. No.

Q. No commercial installation?

A. No, sir.

Q. Was there a McGill bearing installed that way anywhere?

A. Yes, we used the former McGill installed on a shaft before we were there. However, I did not sell the McGill.

Q. But there was no other place where this was installed to your knowledge, the McGill bearing, where the outer race rotated?

A. The California Press Company before I was there had the McGill bearing——

Q. Where the outer race rotated and where the rail was in the outer race? [331]

A. This was the former McGill bearing before they—the McGill bearing that they used formerly was the old style bearing.

Q. Well, how about this Enterprise installation, Enterprise Engines?

A. Well, the Enterprise Engines was a wartime

(Testimony of Ralph F. Stallman.)

installation; that was on heavy 1200 horsepower Diesel engines for the Navy, and up until four years ago when we lost the—when we discontinued the records of it, they had been substantially all taken off and replaced with another bearing.

Q. Why?

A. Because it was outer race rotation with the guide rail and the moving race.

Q. Well, is that the sole reason? Did it work or didn't it work?

A. It didn't work. It worked for a short period of time but was never satisfactory.

Q. Did you have any experience with American Can Company?

A. Yes, the American Can Company has built a substantial number of closing machines in which we have 36 bearings in each machine, eight of which are operating without a race rotation. Now to date we have had about seven failures of the rollers without a race rotation but no failures of the other bearings at all.

Q. I show you this blueprint, Defendant's Exhibit K, and ask [332] you to examine the particular bearing installation. Now that is where the outer race rotates. You heard Mr. Hoffman testify to that—that is the Hillman-Kelley Company installation?

A. This blueprint seems to show three bearings on a pin.

Q. You heard Mr. Hoffman testify that that worked satisfactorily although the outer race rotates and the guide ring is in the outer race?

(Testimony of Ralph F. Stallman.)

A. Yes.

Q. Why would it work when it doesn't work in the other installation?

A. Well, he has got three bearings here, two to help one.

Q. Which means instead of one bearing he has three bearings backing up one another?

A. If this were properly applied he could have gotten by with one bearing but he has used three.

Q. I show you the other Hillman-Kelley blueprint over here, Defendant's Exhibit L, and I ask you to analyze that installation. That is another one which supposedly works successfully with the outer race rotation with the guide rail on the outer race.

A. Well, mechanically this is a very freak application. I can see that it might work but I imagine its life would be very short.

Q. Explain what made you say it is a freak application. [333] The jury doesn't know what you are referring to.

A. Well, in this they have a rather wide faced gear running on a shaft, the outer race rotates and the one half of the bearing is under the center of that gear. One half of the bearing is taking the load. The other half——

Q. Point it out to the jury. Hold up that print and point out where the center line of rotation is.

A. In looking over this drawing it would appear that that gear is symmetrically mounted and the load should come through the center. However, there is a big space around this side and they have

(Testimony of Ralph F. Stallman.)

moved the bearing to one side so that only one half of the bearing is carrying the load.

Q. Is that the usual condition in the mounting of bearings?

A. No. I can't understand why they would do that. That is very unusual.

Q. How many years of practical experience did you have on bearings exclusively?

A. How many years have I had? Over 25.

Q. All in bearings? A. Yes.

Q. With whom was your first job?

A. SKF Industries.

Q. What was your job with them?

A. What is that? [334]

Q. What was your job with them?

A. I was the West Coast industrial engineer on the installations along the West Coast up to Oregon and Washington.

Q. I will show you here Defendant's Exhibit M which is another installation for R.P.B. Corporation, and I ask you to explain that. That is another installation where the outside race rotates with the guide rail in the outside race and allegedly, according to Mr. Hoffman, it works without complaint from the customer.

A. Obviously that would be all right. That is a crane wheel in which it would probably not accumulate not more than two dozen turns a day in an eight hour day.

Q. That is not the everyday application of this kind of roller bearing?

(Testimony of Ralph F. Stallman.)

A. It is an application where any bearing should last a lifetime, 25 to 30 years. In other words, it is only a crane wheel where a crane would run back and forth the length of this room, for instance, maybe three or four trips a day. That is not what we call a hard application.

Mr. White: That is all.

Cross Examination

Q. (By Mr. Mueller): Mr. Stallman, have you ever seen the Hillman-Kelley machine illustrated in parts in the drawings that you identified? Have you ever seen the actual machine?

A. No, I haven't. [335]

Q. And you do not know, from actual observation of the Hillman-Kelley machine, anything about the operating conditions of that machine?

A. This tells me all I want——

Q. Please answer yes or no.

A. No, I have never seen the machine.

Q. Have you ever worked for the Heim Bearing Company, Mr. Stallman? A. No.

Q. Have you ever been connected with the Heim Bearing Company?

A. I have had the Heim Bearing Company manufacture one of my rod end bearings, yes.

Q. Then you were connected with them for a period of time?

A. I was connected with them; they manufactured the bearings for me.

Q. Have you ever seen the installation of a ma-

(Testimony of Ralph F. Stallman.)

chine such as that illustrated in the drawings of the R.P.B. Corporation—that particular machine?

A. Where is R.P.B.? On this drawing that has the——

Q. No; I say have you ever seen a machine such as that?

A. No, I have never seen anything built by this company.

Mr. Mueller: That is all.

Mr. White: That is all, your Honor.

The Court: That is all, sir. [336]

Mr. White: The plaintiff rests. [337]

* * * * *

Mr. White: The agreement as it now stands is that the total amount of money involved in the case is—you have to add these two amounts—is $11,927.81 plus $24,917.37, which is the amount from 1950 to the beginning of the suit.

The Court: $36,835.18? [338]

* * * * *

Mr. Mueller: As to the second motion, your Honor, the defendant moves for a directed verdict upon the following ground: that each of the claims put in issue by plaintiff, namely, claims 3, 4, 5 and 9 of Stallman patent 2,334,227 is anticipated by prior art patents to Kempster 585,580, to Zahn in British patent 17841 of 1906, which were not cited by the Patent Office during the prosecution of the Stallman application, and further by the patent to Heim, 1885914, and to Rydbeck, 1979707, which was

cited by the Patent Office [359] and that the claims are therefore invalid.

No. 2. That if there are any differences in construction and mode of operation of a device embodying the alleged Stallman invention and the prior art bearings, the construction and function of which is taught by the said prior art patent to Kempster, Zahn British, Heim and Rydbeck as aforesaid, those differences relate solely to matters of dimension and degree such as would be apparent to any person skilled in the art, and hence such claims do not cover anything which would rise to the dignity of invention.

No. 3 ground. In so far as the claims in issue purport to define a new combination of elements substantially identical, a combination of elements functioning in substantially the same manner and for the same purpose, is disclosed in aforesaid named prior art patents, and hence the said claims are invalid for want of invention.

No. 4. Plaintiff failed to sustain his burden of proof by showing that defendants have sold bearings coming within the scope of any valid claim of the letters patent in suit.

I so move. [360]

* * * * *

The Court: Under those circumstances I think I shall deny the motion for a directed verdict.

Gentlemen, I have told you generally what the instructions would be on the question of validity. I will give very simple instructions on the question of

infringement, too, very much following what was stated in the Fish Eviscerator case. [372]

* * * * *

Afternoon Session, April 23, 1956

1:30 P.M.

Instructions to the Jury

The Court: Members of the jury: I told you when you were impaneled that you were going to be called upon to sit in judgment in a kind of case that ordinarily juries don't decide. However, this is not too complicated a case and I think that the counsel on both sides have attempted to, and I think perhaps have succeeded in simplifying the issue for you somewhat.

You have, as the jurors in the case, the function of deciding any question of fact that arises in a civil case such as this and that is exclusively your function. I take no part in that as the judge in the case.

During the course of the trial of this case, as the judge, I made some comments in ruling on evidence and made some inquiries myself of witnesses, but the purpose of those procedures on my part was to perform the duties that a judge has to supervise the trial of the case and to expedite it and to elucidate matters that may be somewhat obscure. But you are not to infer from anything I may have said in that regard, or by virtue of any of the inquiries that I made, that I was intending to indicate to you what your decision is to be, because the purpose of those inquiries, as I have already stated, was sim-

ply to perform the duties that a judge [434] has in general to supervise the trial of a case.

Likewise, while it is your function exclusively to decide the question of fact, there is vested in the judge the exclusive function of telling the jury about the applicable law, and in that field the judge is supreme, just as you are in the field of determining what the truth in fact of the matter is. You have to assume, rightfully or wrongly, that the judge knows what he is talking about when he tells you what the law is and you have to apply the law the way he gives it to you.

I say that to you because it sometimes happens that some jurors do come into the jury box from the outside world, as it were, with some preconceived notions on political or economic or social theories and then they proceed to decide the case according to what they think is the proper principle upon which a case should be decided. That is a wrong procedure and we don't permit in the courts, and in fact, if it were permitted, then no person's life, liberty or property would be safe. So it is that we have laid down the rule that you must be guided by what the judge tells you is the law in the case.

It is true that we have somewhat different functions to perform, but nevertheless we do act as a team because we both have the same objective, and that is to see that as near as may be, we can accomplish justice in a particular case.

I have told you that this is a civil case. And in a [435] civil case, the plaintiff—that is, the party who brings the suit—has the burden of proof and he

must prove what he has charged by a proponderance of the evidence.

I might interpolate to say that what I have to say to you today is going to be said quite colloquially. I don't believe in reading written, formal instructions to juries and to fill your ears with a lot of erudite statements that other judges have made or that are found in the books, because it is too much to expect that those who come in from the outside to perform jury duties to understand these intricate principles of law about which the lawyers and the judges from time immemorial have been unable to agree themselves. So it is I will just tell you very simply that my views as to this case are as to the law.

I just started to say to you that the plaintiff has the burden of proving his case by a preponderance of the evidence. And that means that the evidence which he produces, when weighed against opposing evidence, has greater weight and more convincing effect. That doesn't mean that one side or the other has to have more witnesses than the other; it merely means that the quality of the testimony has to preponderate in favor of the plaintiff before the plaintiff can win this case. It is the quality and not the number of witnesses that determines that.

We have some general rules that apply in all civil cases [436] and they apply here, too. I will just give you a few of them very simply.

You have had witnesses testify before you. In every case we start out with the presumption that when a witness comes and sits in this witness chair

that he is going to tell the truth to you. However, that presumption may be rebutted or negatived by the manner in which the witness testifies, by his demeanor on the witness stand, his manner on the witness stand, or whether he contradicts himself or whether he is contradicted by the testimony of other witnesses, and by his interest in the case, whether he has an interest in one side or the other. Those are the factors that you take into account in determining whether or not when the witness leaves the stand he still is clothed with that presumption that he was going to tell the truth when he took the stand.

If you should conclude that any witness has testified falsely in any material respect, then you are justified in disregarding all the testimony of a witness. You should, however, not take that drastic step unless it appears to you that the witness has testified in a very material respect.

You are not to determine the case on the basis of or as a result of the influence upon you of any sympathetic considerations you may have or any prejudice you may have.

This being a patent case makes it no different so far as the burden of the plaintiff may have in the case of proving [437] his case by a preponderance of the evidence.

The lawyers have argued the case to you. That is their right, and indeed, it is their duty. However, if they have stated differently the evidence in their arguments, as you call it as having been given by the witnesses, disregard the statements of the evi-

dence as made by the attorneys and only give consideration to the evidence as you recall it as having been given by the witnesses.

In this case there is involved the question of whether or not the plaintiff has a valid patent; secondly, if he has a valid patent, whether the defendant infringed upon what he claimed in his patent; and then, thirdly, if you conclude that the plaintiff has a valid patent and that it is infringed by the defendant, then how much damages he is entitled to receive.

As patent cases go, and I have heard quite a few of them, this is a comparatively simple one, although it may appear to you to have complexity to it because of the variety of the devices that counsel on each side have availed themselves of in order to explain and urge the correctness of their respective sides of the case.

The plaintiff filed in the United States Patent Office on August 9, 1941 his claim for a patent, and the Patent Office granted that patent to him on November 16, 1943.

He made a number of claims in his patent. The claims, as they are spoken of by the lawyers, mean the things that [438] he said that entitle him to the benefit of a patent. Sometimes a large number of these claims are made in patents in order, I take it, to be sure that the claimant feels that he has covered the entire ground with respect to the invention which he claims.

In this case, however, there are four claims in the patent that are relied upon: claims 3, 4, 5 and 9,

and those are the only four claims that you need give consideration to in determining the issue of validity in this case. And in your verdict, if you decide in favor of the plaintiff and that the defendant has infringed, you will be required to indicate in the verdict, as I will subsequently point out to you, the particular claim or claims that you believe are valid and have been infringed if you come to that conclusion.

The first thing that you will want to know, the first thing that will enter your mind, since this is a patent case, is what is a patent. What is it that we are talking about, that the lawyers have argued to you about?

Well, I say to you colloquially that a patent is a right or privilege which the United States grants in accordance with the provisions of the Constitution of the United States to a private person. This right or privilege of grant that we call a patent gives the person to whom it is granted the right to exclude all other persons from the manufacture or sale or use of the particular device covered by the particular [439] invention for a period of 17 years. The grantee gets that exclusively for himself. It is a monopoly that he gets, that the state or country grants him, and he gives in return for it this: He discloses to the world, by virtue of having filed this patent, what his claimed invention is. And it is good for 17 years.

In order that one of these patents may be granted by the Patent Office of the United States—and the Patent Office is the agency through which the gov-

ernment acts in passing upon these patents—it must appear from these claims that are set forth in the patent that the patentee has discovered something that has originality and novelty over and beyond what has theretofore been discovered and recorded in the Patent Office, which the lawyers have spoken of and called the prior art.

The particular patent that is involved in this case is what is commonly described as a combination patent. The plaintiff here has asserted in his claims an arrangement or combination of various elements which he says is something new in that it is an improvement over that which has gone before in that particular field. He doesn't claim that he invented any of these various elements that go to make up the combination, but that the arrangement that he has made of them and in the particular form that he sets forth in his complaint accomplishes a purpose beyond that which has theretofore been accomplished and is an improvement of a substantial [440] nature over that which has gone before.

An applicant for a patent can not get a patent merely because he aggregates or puts together elements that have already been discovered. He must produce, as a result of his aggregation or bringing together of these elements, a combination which the law says entitles him to a patent because of the novelty and the improvement over the prior art which that particular aggregation of the so-called older elements produces.

To illustrate that to you: What is involved in this case, as the lawyers have told you, is something that

involves roller bearings. We have all heard the expression ball bearings probably more frequently, but these are rollers rather than balls.

The plaintiff in this case does not claim that the roller is something new; that the slot in the roller is something new; that the track upon which this proceeds in the rolling operation is something new, or that it operates between an outer and an inner surface which the lawyers have called races—none of those things he claims is new.

As I understand the contentions of the parties in this case, the principal contention of the plaintiff as to the originality of the claims of the patent is that this track on which the roller operates is fixed—the track is fixed to it and it remains immovable, whereas the other container, the [441] inner container, may be movable. The chief claim that he makes is the rigidity or firmness of this outside container in which the roller bearing rolls over a fixed sort of a track.

The other side contends that that is not a novelty and that it is disclosed in these other patents that have been referred to.

So the principal direction that your efforts, in my opinion, should take in this case is that you should consider what the records and the testimony show in this case and determine whether or not this claim of the plaintiff in that regard is something that is new and novel. And in determining that, devoting your efforts to that consideration, you should bear in mind that the test as to invention or novelty as laid down by our courts is this: that if that

which has been developed or claimed to have been invented goes beyond what the ordinary artisan skilled in that particular field of mechanics could do, then it amounts to invention, and if it is not something more than the ordinary artisan or skilled —person skilled in that particular work would produce as a result of his general knowledge—if it is not something more than that, then it is not invention.

There is another matter that has been referred to by counsel which I will now tell you about. There is, because of the issuance by the United States Patent Office a presumption that the patent is valid, and if we were to stop the case at [442] the point where the patent was introduced, that presumption of validity would be enough to establish the plaintiff's case. But the other side may go forward, as they have in this case, and produce evidence in support of their contention that the patent is invalid; that the Patent Office made an error; that they did not give proper consideration to the prior art patents, and that an examination of these discloses that there was in fact and in truth not invention. And the question, then, is whether or not that evidence overcomes the presumption that you start out with that the patent is valid because the Patent Office issued it.

If you determine from the evidence that you have heard here, after considering the presumption of validity that attaches to the patent and the evidence offered against it, that the plaintiff has a valid patent, then the next question you would have to deter-

mine would be whether or not the defendant has infringed the patent of the plaintiff—that is, the claims of the plaintiff's patent.

Infringement means whether or not the defendant has constructed a device which appropriated for the defendant the essential elements of the plaintiff's patent.

In order that infringement be established, it must appear that the defendant has appropriated all of the elements of the claims that the plaintiff has set forth in his patent. If the evidence shows in this case preponderantly that the device [443] which the defendant distributes accomplishes substantially the same results by substantially the same means as that which is disclosed in the claims of the plaintiff's patent, then it would appear that there has been infringement.

In considering the question of infringement, you should look at substance and not form. You should look at those things which are the substance of the device and not be confused by matters of form. Any insubstantial change is not a defense as against infringement if in substance the defendant has appropriated the claims of the plaintiff's patent.

The first subject I would suggest in your consideration of this case is to consider the question of whether or not on the evidence and the facts and in accordance with such instructions as I have given you the plaintiff's patent is valid or not. If you conclude that the plaintiff's patent is invalid, that will end your consideration of the case and you will bring in a verdict then for the defendant. If you de-

cide that the claims set forth in the plaintiff's patent are valid, then you will next consider the question of infringement. And if you decide that the defendant has infringed the claims of the plaintiff's patent, then the next step for you to take is to determine what damage, if any, plaintiff is entitled to.

In this case the plaintiff is not a manufacturer, so [444] the basis of any damages that he can recover in the event that you find his patent is valid and infringed is by way of a royalty for the unauthorized use of his patent.

In this case it has been stipulated that the sum of $36,835.18 is the total amount which these Guiderol bearings have been sold at by the defendant in this case. So that in order to determine what the damage of the plaintiff is, you will have to fix a percentage of that $36,835.18 as a royalty, and whatever percentage should be fixed in that regard should be reasonable.

I will say to you that, in my opinion, there is a paucity of evidence in this case on the subject of royalty, although there is some evidence in the case that on sales made during the period of time when the plaintiff was receiving royalties from the manufacturer the amount was ten per cent; that that amount was paid. I would suggest to you, therefore, that you won't go too far wrong if you use that as a basis for determining the royalty percentage involved if you reach a verdict in favor of the plaintiff. You are not bound by my suggestion in that regard; you can come to your own conclusion. Whatever you think the evidence reasonably dis-

closes on the question of what would be a reasonable royalty under the circumstances, you could use in determining the amount of any royalty to be paid.

I think, members of the jury, that this is about as much [445] help as I can give to you on the question of the law. I could talk to you for a long time on the subject of patents. These lawyers and others like them have written volumes on the subject and judges have written volumes on the subject. But I think that if I would say more it would only be confusing and not be enlightening.

If you can conscientiously do so, you are expected to agree upon a verdict in the case. Each side is entitled to the independent judgment of each one of you. When you go out to deliberate, you should freely consult with one another and exchange your views. If after an exchange of views, you have doubts about your own conclusion in the matter, you should not be stubborn, you should not hesitate to abandon your own view. On the other hand, if after a full exchange of ideas, you believe that the view that you have expressed is correct, and in your conscience you feel it to be correct, you should have no hesitancy in adhering to it.

Whenever all of you agree to a verdict, it is the verdict of the jury. In the federal court we require a unanimous verdict. So therefore you should not return to the courtroom from the jury room with a verdict unless in the jury room all of you have agreed to it.

When you have retired to deliberate you will select one of your number as foreman or forelady, as

the case may be, and he or she will preside over your deliberations, will [446] represent you in the further conduct of this case here and will sign your verdict for you when it has been reached.

We have prepared for your consideration two forms of verdict. One form of verdict reads:

"We, the jury, find in favor of the defendant." You will use that form of verdict if you decide in favor of the defendant and hold the plaintiff's patent to be invalid, or if you should happen to hold that the plaintiff's patent is valid but not infringed, when you come to a decision in favor of the defendant, then that would be the form of verdict you would use and that form of verdict would be your verdict.

In the event that you decide in favor of the plaintiff, then you would use this form of verdict which reads:

> "We, the jury, find in favor of the plaintiff and determine that the Stallman patent No. 2,334,227 is valid and infringed by the defendant as to claims No."——

then you will put in there in that blank space whether you consider that all four claims, 3, 4, 5 and 9 were infringed or only one or a lesser number were infringed. And then the form of verdict goes on to read further:

> "We find damages against the defendant, Casey Bearing Company, in the sum of Blank Dollars, which is Blank per cent of $36,835.18, the total price of Guiderol bearings which have

been stipulated to have been sold by the defendant." [447]

And you will put in the blank space the percentage of royalty that you feel is proper in the case and multiply the total amount of $36,000 by the percentage and then fill in in the other blank space the royalty that you get as a result of that, and then your foreman will sign that form of verdict for you and it will be your verdict.

When you see the form of this verdict outside in the jury room, you perhaps will understand when you have it before you a little more clearly than my explanation of it, because I am holding it in my hand and you are at a distance and you are not able to follow it in front of you.

After you have retired to the jury room and have organized and elected a foreman, if you wish to see all or any of the exhibits or documents that have been admitted in evidence in the case, you will notify the bailiff and I will see that they are sent to you.

Does either side have any corrections or objections?

Mr. Mueller: No, Your Honor.

Mr. White: No, Your Honor.

The Court: Very well. Since there are no objections to the instructions, the jury may retire.

(Thereupon the jury retired at 2:05 o'clock p.m., and returned into court at 4:30 o'clock p.m., at which time the following proceedings were had:) [448]

The Court: Mr. Foreman, has the jury reached a verdict?

The Foreman: Yes, Your Honor.

The Court: Would you hand the verdict to the marshal, please?

Will you read the verdict?

The Clerk: Ladies and gentlemen of the jury: Hearken to your verdict as it will stand recorded:

"We, the jury, find in favor of the plaintiff and determine that the Stallman patent No. 2,334,227 is valid and infringed by the defendant as to claims Nos. 3, 4, 5 and 9.

"We find damages against the defendant Casey Bearing Company, Inc., et al., in the sum of $3,683.51 which is ten per cent of $36,835.18, the total price of the Guiderol bearings which have been stipulated to have been sold by the said defendant. Frank A. Webster, Jr., Foreman."

Is the verdict as read the unanimous verdict of all the jurors in the jury box?

The Jurors: It is. It is.

The Court: Do you wish the jury polled, counsel?

Mr. Mueller: Yes, if it please Your Honor.

The Court: Poll the jury.

(The Clerk thereupon polled the jury [449] and all the jurors responded in the affirmative that it was their verdict.)

The Court: Twelve jurors having answered in the affirmative that the verdict as read by the Clerk

is the unanimous verdict of the jury, the Clerk may record the verdict.

The Clerk: Yes, Your Honor.

The Court: Members of the jury, the Court wishes to thank you for the attention and consideration that you have given this somewhat new case for you as jurors. You probably will have some further service in this court during the period for which you were impaneled. When that will be I don't know, but whenever it does come you will get the sad news from the United States marshal.

The jurors may be excused.

(Thereupon the jurors retired from the courtroom and the following proceedings were had.)

* * * * *

[Endorsed]: Filed October 11, 1956.

[Endorsed]: No. 15328. United States Court of Appeals for the Ninth Circuit. Ralph F. Stallman, Appellant, vs. Casey Bearing Company, Inc., a corporation, and T. W. Crosby, Appellees. Transcript of Record. Appeal from the United States District Court for the Northern District of California, Southern Division.

Filed: October 16, 1956.

/s/ PAUL P. O'BRIEN,
Clerk of the United States Court of Appeals for the Ninth Circuit.

In the United States Court of Appeals for the Ninth Circuit

Case No. 15328

RALPH F. STALLMAN Appellant,

vs.

CASEY BEARING COMPANY, INC., a corporation; and T. W. CROSBY, Appellee.

STATEMENT OF POINTS ON WHICH APPELLANT INTENDS TO RELY

Appellant herewith makes the following statement of points on which he intends to rely in this appeal:

1. The Trial Court erred in overruling the jury's verdict that the differences between the subject matter of the claims of the patent in suit and the prior art are such that the subject matter as a whole would not have been obvious at the time the invention was made to a person having ordinary skill in the art to which such matters pertain.

2. The Trial Court erred in considering the comparison of prior patents with the claims in suit of plaintiff's patent as a question of law, although the same comparison is a question of fact on which the jury's verdict is final.

3. The Trial Court erred in disregarding that there is evidence of sufficient substantiality to sup-

port a verdict in favor of plaintiff, and in disregarding the rule of law that the jury's verdict is final on questions of fact and that conflicting evidence is for the jury and not for the Court on motion for directed verdict or for judgment notwithstanding the verdict.

4. The Trial Court erred in holding that the only reasonable conclusion that can be drawn from the comparison of the prior art with the teaching of plaintiff's patent is that the patent is invalid.

5. The Trial Court erred in its ruling that plaintiff's contribution to the art did not advance the frontiers of science in the narrow field of bearings so as to satisfy the exacting standards of our patent system.

6. The Trial Court erred in ruling as a matter of law that the claims of the patent in suit are invalid.

7. The Trial Court erred in setting aside the verdict of the jury and entering judgment in favor of defendant.

Dated: October 19th, 1956.

GEORGE B. WHITE
ALBERT D. ELLEDGE
/s/ By GEORGE B. WHITE

Attorneys for Appellant

Certificate of Mailing Attached.

[Endorsed]: Filed October 19, 1956. Paul P. O'Brien, Clerk.

[Title of Court of Appeals and Cause.]

DESIGNATION OF RECORD ON APPEAL

Plaintiff-appellant hereby designates the following in the case to be contained in the record of appeal:

Complaint;

Answer of Casey Bearing Company, Inc., and T. W. Crosby to Complaint;

Notice by Defendant of Additional Prior Art to Be Relied Upon at Trial;

Verdict;

Judgment on Verdict;

Motion of Defendant for Judgment Notwithstanding Verdict and Motion for a New Trial;

Opinion of Court on Motion for Judgment Notwithstanding Verdict;

Judgment;

Notice of Appeal;

Appeal Bond;

This Designation of Record on Appeal.

The following parts of the Reporter's Transcript of proceedings April 18, 19, 20 and 23, 1956:

* * * * *

The following Exhibits in Book of Exhibits:

Exhibit 1—Stallman U. S. Patent No. 2,334,227.

Out of Ex. O—British Zahn Patent No. 17841;

Out of Ex. O—Kempster U. S. Patent No. 585,580;

Out of Ex. P—Rydbeck U. S. Patent No. 1,979,707;

Out of Ex. P—Heim U. S. Patent No. 1,885,914;
Out of Ex. P—Kempster U. S. Patent No. 747,-324;

(Appellant will furnish copies of the above Exhibits to be included in such Book of Exhibits).

All the remaining Exhibits in this case to be considered in their original form and not to be printed.

GEORGE B. WHITE
ALBERT D. ELLEDGE
/s/ By GEORGE B. WHITE
Attorneys for Appellant

Certificate of Mailing Attached.

[Endorsed]: Filed October 19, 1956. Paul P. O'Brien, Clerk.

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